

**No. 136 Nassau Street.**

**FARMERS! ATTENTION!!**

**John Mayher & Co's**  
NEW AGRICULTURAL WAREHOUSE  
AND SEED STORE.

197 WATER STREET, NEW YORK.

Where they have for Sale, the largest and most complete assortment of Farming Implements, ever offered for sale in this city—all of which they will sell 10 per cent. Cheaper than the same kind of Goods can be bought at any other house in the city. Our Goods are all Warranted to give satisfaction.

FARMERS wanting to purchase, will please call and examine our Stock before buying elsewhere.

Among our assortment may be found the Celebrated Highest Premium Eagle Ploughs! together with all the most approved Ploughs now in use.

Also,—Horse Powers, Threshing Machines, Fan Mills, Corn Shellers, Straw Cutters, Corn Mills, Seed Sowers, Churns, Ox Yokes, Ox Scrapers, Hay Rakes, Horse Rakes, Patent Chain Pump (that never freezes nor rusts), and other Pumps; in fact we have everything for Farming Purposes—together with Guano, Bone Dust and other Fertilizers.

JOHN MAYHER & CO.,  
197 Water st., N. Y.

February 9, 1850.

N.B.—J. M. & Co. also continue their Old Stand, at 195 Front street, near Fulton Market.

STABILITY—SECURITY—PERPETUITY.

**Mutual Life Insurance Co. of New York.**

No. 35 WALL STREET.

**A MILLION OF DOLLARS**

Securely invested in Bonds and Mortgages on real estate in this city and Brooklyn, and stocks of the State and City of New York and United States Government.

This fund is rapidly increasing, by a widely extended and prosperous business.

The company declared a dividend of profits of fifty-two per cent. on all existing policies on the 31st of January, 1848.

All the Profits are Divided Among the Insured.

The premiums are payable in Cash annually, semi-annually, or quarterly, interest being added on the deferred payments.

The cash principle adopted by this company secures to the parties for whose benefit the insurances are effected, the whole of the advantages, without subjecting them to the heavy drawback of accumulated premium notes.

Persons may effect insurance on their own lives and the lives of others.

A married woman can insure the life of her husband, the benefits of which are secured by law for the exclusive use of herself or children.

Clergymen and all others dependent upon salaries or their daily earnings are specially invited to avail themselves of a resource whereby their surviving families may be secured from the evils of penury.

Pamphlets explanatory of the principles of Mutual Life Insurance, and illustrating its advantages, with forms of application, may be obtained at the office of the company, 35 Wall street, or of any of its agents.

**TRUSTEES.**

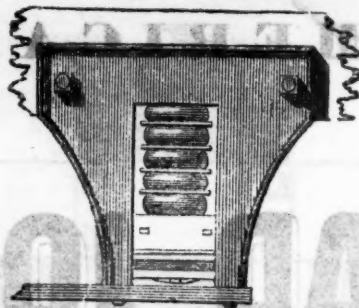
Jos. B. Collins, David C. Colden,  
Wm. J. Hyslop, Alfred Edwards,  
R. H. McCurdy, Wm. Betts,  
Fred. S. Winston, Joseph Blunt,  
C. W. Faber, Isaac G. Pearson,  
John P. Yelverton, Henry Wells,  
Theo. Sedgwick, Wm. Moore,  
Stacy B. Collins, Zebedee Cook,  
John H. Swift, Jona. Miller,  
John Wadsworth, David A. Comstock,  
S. M. Cornell, Robert Schuyler,  
Gouv. M. Wilkins, James Chambers,  
John V. L. Pruyn, Joseph Tuckerman,  
Fred. Whittlesey, Moses H. Grinnell,  
Charles Ely, Wm. J. Banker,  
John C. Cruger, Eugene Duilh,  
Walter Joy, Francis S. Lathrop,  
Alfred Pell, John C. Thatcher.

JOSEPH. B. COLLINS, President.  
ISAAC ABBATT, Secretary. 3m9

**Railroad Instruments.**

**THEODOLITES, TRANSIT COMPASSES,** and Levels, with Fraunhoffer's Munich Glasses, Surveyor's Compasses, Chains, Drawing Instruments, Barometers, etc., all of the best quality and workmanship, for sale at unusually low prices, by  
**E. & G. W. BLUNT,**  
No. 129 Water St., cor. Burling Slip.  
New York, May 19, 1849.

**FULLER'S PATENT  
INDIA RUBBER SPRING.**



THESE SPRINGS ARE THE CHEAPEST, the lightest and most durable of any yet known. They are easily applied to new or old cars, and there is small possibility of any accident occurring to them. Other parties through Mr. Ray set up claims to an India Rubber Spring which, though the same in principle, is very inferior in its working and durability. Actions are in progress for an Infringement on Fuller's Patent against parties using that Spring. The superiority of Fuller's Spring over that claimed by Mr. Ray is fully established and has frequently been testified to. The following are from gentlemen who have had much experience with both Springs.

"It will afford me pleasure to recommend your springs to the companies in this region, in preference to Ray's which I am confident are inferior in mechanical arrangement to yours." JOHN M'RAE,  
Engineer S. Carolina R. R., Charleston.

"I do not hesitate to allow you to say that I concur in Mr. M' Rae's opinion that Ray's springs are inferior in mechanical arrangement to Fuller's. I repeatedly expressed that opinion long before Mr. M' Rae had seen your springs (as I believe) and entertain it still." WM. PARKER,  
Gen'l Supt. of Baltimore and Ohio R. R.

Office of Sup't Norwich & Worcester R.R. Co.,  
December 26, 1849.

"I most fully concur in the opinion of Jno. M' Rae, Engineer of S. Carolina Railroad, that 'Ray's Springs are inferior to Fuller's Springs,' and shall with pleasure recommend them to all Railroad Companies for adoption. I have used both springs on this road and have no hesitation in saying that I should in all cases prefer Fuller's Spring."

SAM'L H. P. LEE, JR.,  
Supt and Engineer.

Office B. & P. R. R. Co.,  
Boston, 20th December, 1849.

"This company have cars fitted up with both Ray's and Fuller's 'Metallic India Rubber Springs,' and I do not hesitate to say that Fuller's arrangement is very much superior to Ray's."

W. RAYMOND LEE, Supt.

The following result has been obtained by experiment upon one railroad.  
A set of Trucks fitted with Steel Springs cost \$190-77 and weigh 2355 lbs.  
The same with Fuller's Springs, . . . 131-71 " 1911 lbs.

Difference, . . . \$59-06 " 444 lbs.  
Not only is there an advantage in the cost, but owing to the great reduction in weight, the car can be made lighter throughout, and so an enormous saving in weight may be effected in a Train.

G. M. KNEVITT, 38 Broadway, N. Y.,  
General Agent for the U. S.

The Springs can also be had of  
JAMES LEE & CO., 18 India Wharf, Boston, &  
JAS. THORNLEY, 110 Chestnut St., Philad.  
January 2, 1850.

**American Cast Steel.**

THE ADIRONDAC STEEL MANUFACTURING CO. is now producing, from American iron, at their works at Jersey City, N.J., Cast Steel of extraordinary quality, and is prepared to supply orders for the same at prices below that of the imported article of like quality. Consumers will find it to their interest to give this a trial. Orders for all sizes of hammered cast steel, directed as above, will meet with prompt attention.  
May 23, 1849.

**NOTICE TO**

**Superintendents of Railroads.**

**TYLER'S PATENT SAFETY SWITCH.**—The undersigned would respectfully call their attention to his Patent Safety Switch, which from long trial and late severe tests has proved itself perfectly reliable for the purpose for which it was intended. It is designed to prevent the train from running off when the switch is set to the wrong track by design or accident. The single rail or gate switch is established as the best and safest switch for the ordinary purpose of shifting cars from one track to another, but it is liable to the serious evil of having one track open or broken when connected with the other. My improvement entirely removes this evil, and while it accomplishes this important office, leaves the switch in its original simplicity and perfection of a plain unbroken rail, connecting one track with the other ready for use.

The following decision of the Commissioner of Patents is respectfully submitted to Railroad Engineers, Superintendents, and all others interested in the subject.  
P. B. TYLER.

(COPY.)

UNITED STATES PATENT OFFICE, }

Washington City, D.C., April 28th, 1846.

Sir: You are hereby informed that in the case of the interference between your claims and those of Gustavus A. Nicolls, for improvements in safety switches—upon which a hearing was appointed to take place on the 3d Monday in March, 1846, the question of priority of invention has been decided in your favor. Inclosed is a copy of the decision. The testimony in the case is now open to the inspection of those concerned.

Yours respectfully,  
EDMUND BURKE,  
Commissioner of Patents.

To Philos B. Tyler.

Any further information may be obtained by addressing P. B. TYLER, Springfield, Mass., or JOHN PENNILETON, Agent, 149 Hudson St., New York.

**PHILADELPHIA CAR MANUFACTORY,**

CORNER SCHUYLKILL 2d and HAMILTON STS.,  
SPRING GARDEN, PHILADELPHIA CO., PA.

**Kimball & Gorton,**

Having recently constructed the above works, are prepared to construct at short notice all kinds of

**RAILROAD CARS, Viz:**

Passenger Cars of all classes—Open and Covered Freight and Express Cars—Coal Cars—Hand Cars & Trucks of all descriptions.

They are also prepared to furnish Chilled Wheels of any pattern. Car Wheels & Axles fitted and furnished. Snow Ploughs and Tenders made to order. Steel and other Springs always on hand.

All orders will be filled at short notice, and upon as good terms as at any other establishment in the country. Omnibuses from the Exchange run within one square of the manufactory every 10 minutes during the day.  
Philadelphia, June 16, 1849. ly25

**C. W. Bentley & Co,**

IRON Founders, Portable Steam Engine Builders  
and Boiler Makers, Corner Front and Plowman  
Sts., near Baltimore St. Bridge,

BALTIMORE, MARYLAND.

Their Engines are simple in their construction, compact and durable; they require no brick work in setting them, and occupy but a small space (a six horse power engine and boiler, standing on a cast iron plate of three by six feet.)

They also manufacture Major W. P. Williamson's new oscillating Engine; a superior article, combining cheapness and simplicity (one of which may be seen in operation at their shop.) Both of these engines are adapted to any purpose, where power is required, and may be made of any capacity; and for economy in use of fuel are unsurpassed.

All kinds of machinery made to order. Steam Generators, Force Pumps, Wrought Iron Pipes and Fittings for Steam, Water, Gas, etc., constantly on hand,  
Baltimore, June 6, 1849.

**CORROSIVE SUBLIMATE.**

THIS article now extensively used for the preservation of timber, is manufactured and for sale by POWERS & WRIGHTMAN, manufacturing Chemists, Philadelphia.  
Jan. 20, 1849.

**Coal.**

CUMBERLAND SEMI-BITUMINOUS COAL  
superior quality for Locomotives, for sale by  
H. B. TEBBETTS,  
No. 40 Wall St., New York.  
May 12, 1849. 1m19



**IRON BRIDGES, BRIDGE & ROOF BOLTS,**  
etc. STARKS & PRUYN, of Albany, New York,  
having at great expense established a manufactory with  
every facility of Machinery for Manufacturing Iron  
Bridges, Bridge and Roof Bolts, together with all kinds  
of the larger sizes of Screw Bolts, Iron Railings, Steam  
Boilers, and every description of Wrought Iron Work,  
are prepared to furnish to order, on the shortest notice,  
any of the above branches, of the very best of Amer-  
ican Refined Iron, and at the lowest rates.

During the past year, S. & P. have furnished several  
Iron Bridges for the Erie Canal, Albany Basin, etc.  
—and a large amount of Railroad Bridge Bolts, all of  
which have given the most perfect satisfaction.

They are permitted to refer to the following gentle-  
men:

Charles Cook,	Canal Commissioners
Nelson J. Beach,	of the
Jacob Hinds,	State of New York.
Willard Smith, Esq.,	Engineer of the Bridges for
Messrs. Stone & Harris,	the Albany Basin.
Mr. Wm. Howe,	Railroad Bridge Builders,
Mr. S. Whipple,	Springfield, Mass.
	Engineer & Bridge Builder,
	Utica, N. Y.

January 1, 1849.

**TO RAILROAD COMPANIES AND BUILD-  
ERS OF MARINE AND LOCOMOTIVE  
ENGINES AND BOILERS.**

**PASCAL IRON WORKS.**

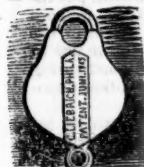
**WELDED WROUGHT IRON TUBES**

From 4 inches to 1 in calibre and 2 to 12 feet long,  
capable of sustaining pressure from 400 to 2500 lbs.  
per square inch, with Stop Cocks, T. L., and  
other fixtures to suit, fitting together, with screw  
joints, suitable for STEAM, WATER, GAS, and for  
LOCOMOTIVE and other STEAM BOILER FLUES.



Manufactured and for sale by  
**MORRIS, TASKER & MORRIS.**  
Warehouse S. E. Corner of Third & Walnut Streets,  
**PHILADELPHIA.**

**To Railroad Companies, etc.**



The undersigned has at last suc-  
ceeded in constructing and securing  
by letters patent, a Spring Pad-lock  
which is secure, and cannot be  
knocked open with a stick, like other  
spring locks, and therefore particu-  
larly useful for locking Cars, and  
Switches, etc.

Companies that are in want of a  
good Pad-lock, can have open samples sent them that  
they may examine and judge for themselves, by send-  
ing their address to

C. LIEBRICH,  
46 South 8th St., Philadelphia.  
6m\*

November 3, 1849.

**Mattewan Machine Works.**

THE Mattewan Company have added to their Ma-  
chine Works an extensive LOCOMOTIVE ENGINE  
department, and are prepared to execute orders for Lo-  
comotive Engines of every size and pattern—also Ten-  
ders, Wheels, Axles, and other railroad machinery, to  
which they ask the attention of those who wish such  
articles, before they purchase elsewhere.

**STATIONARY ENGINES, BOILERS, ETC.,**  
Of any required size or pattern, arranged for driving  
Cotton, Woollen, or other Mills, can be had on favora-  
ble terms, and at short notice.

**COTTON AND WOOLLEN MACHINERY,**  
Of every description, embodying all the modern im-  
provements, second in quality to none in this or any  
other country, made to order.

**MILL GEARING,**

Of every description, may be had at short notice, as  
this company has probably the most extensive assort-  
ment of patterns in this line, in any section of the  
country, and are constantly adding to them.

**TOOLS.**

Turning Lathes, Slabbing, Planing, Cutting and  
Drilling Machines, of the most approved patterns, to-  
gether with all other tools required in machine shops,  
may be had at the Mattewan Company's Shops, Fish-  
kill Landing, or at 66 Beaver street, New York.  
WM. B. LEONARD, Agent.

**HEAD QUARTERS FOR RUBBER GOODS.**



**The Union India Rubber Company,**

MANUFACTURERS AND DEALERS IN EVERY VARIETY OF

**GOODYEAR'S PATENT METALLIC RUBBER FABRICS,**

Which they offer on the most liberal terms at their Warehouse,

**NO. 19 NASSAU STREET, NEW YORK.**

Articles which this Company has the exclusive right to make comprise in part

Beds,	Overcoats,	Life Preservers,	Mail Bags,	Camp Blankets,
Pillows,	Leggins,	Boat Floats,	Breast Pumps,	Travelling Bags,
Cushions,	Syringes,	Souwesters,	Saddle Bags,	Wading Boots,
Caps,	Canteens,	Gun Cases,	Clothing of all kinds,	Horse Covers,
Tents,	Buoys,	Portable Boats,	Carriage Cloth, assor.	Piano Forte Covers,
Bottles,	Maps,	Horse Fenders,	Hospital Sheetting,	Railroad Gum,
Tubs,	Sheet Gum,	Water Tanks,	Mattress Covers,	Hose, all kinds,
Caps,	Tarpaulins,	Army Goods,	Bathing Caps,	Shower Baths,
Pants,	Life Jackets,	Navy Goods,	Baptismal Pants,	Chest Expanders.

Together with all new applications of the Patent Rubber, which with Boots and Shoes, Packing, Machine  
Belt, Suspensers, Gloves and Mittens, Tobacco Wallets, Balls, Baby Jumpers, Elastic Bands, etc., etc.,  
will be sold to the Trade at Factory prices.

\* \* All orders for special articles to be manufactured, should be accompanied with full descriptions and draw-  
ings.

October 20, 1849.

**RAILROAD**

**India-rubber Springs.**

If any Railroad Company or other party desires it,  
the NEW ENGLAND CAR COMPANY will furnish  
India-rubber Car Springs made in the form of washers,  
with metallic plates interposed between the layers, or  
in any other form in which they can be made; in all  
cases guaranteeing the right to use the same against  
any and all other pretended rights or claims whatsoever.

F. M. Ray, 98 Broadway, New York.  
E. CRANE, 99 State Street, Boston.  
1849.

**Brown's Old Established  
SCALE WARE HOUSE,**

NO. 234 WATER ST., NEW YORK.

THE Subscriber, Practical Manufacturer of Scales  
of every description, respectfully asks the atten-  
tion of Railroad Companies to his Improved Wrought  
Iron Railroad Track and Depot Scales which for  
strength, durability, accuracy, convenience in weigh-  
ing, and beauty of workmanship, are not surpassed by  
any others in this country.

He is aware that this is rather a bold assertion for  
him to make, yet he can say with confidence that they  
have but to be tried to give them precedence over all  
others.

Bank Scales made to order, and all Scales of  
his make Warranted in every particular.  
References given if required.

THE NEWCASTLE MANUFACTURING Co.  
continue to furnish at the Works, situated in the  
town of Newcastle, Del., Locomotive and other steam  
engines, Jack Screws, Wrought Iron Work and Brass  
and Iron Castings, of all kinds connected with Steam-  
boats, Railroads, etc.; Mill Gearing of every descrip-  
tion; Cast Wheels (chilled) of any pattern and size,  
with Axles fitted, also with wrought tires, Springs,  
Boxes and bolts for Cars; Driving and other wheels  
for Locomotives.

The works being on an extensive scale, all orders  
will be executed with promptness and despatch. Com-  
munications addressed to Mr. William H. Dobbs, Su-  
perintendent, will meet with immediate attention.

ANDREW C. GRAY,  
President of the Newcastle Manuf. Co.

**DEAN, PACKARD & MILLS,**

MANUFACTURERS OF ALL KINDS OF

**RAILROAD CARS,**

SUCH AS

PASSENGER, FREIGHT AND CRANK CARS,

— ALSO —

SNOW PLOUGHS AND ENGINE TENDERS

OF VARIOUS KINDS.

CAR WHEELS and AXLES fitted and furnished

at short notice; also, STEEL SPRINGS

of various kinds; and

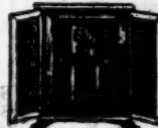
SHAFTING FOR FACTORIES.

The above may be had at order at our Car Factory,

REUEL DEAN, }  
ELIJAH PACKARD, } SPRINGFIELD, MASS.  
ISAAC MILLS, } 1y48

**Iron Safes.**

FIRE and Thief-proof Iron Safes, for Merchants,  
Banks and Jewelers use. The subscriber manu-  
factures and has constantly on



hand, a large assortment of Iron  
Safes, of the most approved con-  
struction, which he offers at much  
lower rates than any other manu-  
facturer. These Safes are made  
of the strongest materials, in the  
best manner, and warranted en-  
tirely fire proof and free from dampness. Western  
merchants and the public generally are invited to call  
and examine them at the store of E. Corning & Co.,  
sole agents, John Townsend, Esq., or at the manu-  
factory.

Each safe furnished with a thief-detector lock, of the  
best construction.

Other makers' Safes repaired, and new Keys and  
Locks furnished at the shortest notice.

H. W. COVERT

cor. Steuben and Water sts. Albany

August 24, 1849.



### NEW YORK IRON BRIDGE COMPANY.

The Bridges manufactured by this Company having been fully tested on different Railroads, by constant use for more than two years, and found to answer the full expectations of their most sanguine friends, are offered to the public with the utmost confidence as to their great utility over any other Bridge now known. The plan of this Bridge is to use the iron so as to obtain its greatest longitudinal strength, and at the same time it is so arranged as to secure the combined principles of the Arch, Suspension and Triangle, all under such controlling power as causes each to act in the most perfect and secure manner, and at the same time impart its greatest strength to the whole work.

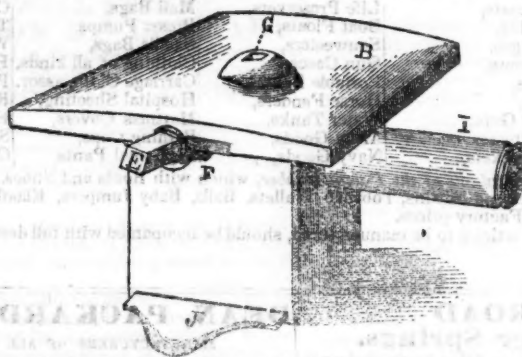
The New York Iron Bridge Company are prepared to furnish large quantities of Iron Bridging for Railroad or other purposes, at short notice, and at moderate prices.

Models, and pamphlets giving full descriptions of the above Bridge, with certificates based on actual trial from undoubted sources, will be found at the office of the Company, 39 Jauncey Court, Wall st., or of W. RIDER & BROTHERS, 19 Nassau Street, where terms of contract will be made known, and where orders are solicited.

August 29, 1849.

M. M. WHITE,  
Agent for the Company.

### E. Harris' Patent Rotary Blacksmith Tuyere.



LETTERS Patent were issued January 9, 1849, to E. HARRIS, of Springfield, for an Improved Rotary Blacksmith Tuyere. Since that time there have been some hundreds put in operation, giving satisfaction and full proof of superiority over all others.

This Tuyere is so arranged that by one movement it can be changed from the largest work to the smallest; at the same time the fire is changed in proportion, thereby making a great saving in coal. Words cannot convey the full merits of this Tuyere; nor is it deemed necessary to speak in disparagement of other Tuyeres, as every smith is capable of judging for himself, and will give merit where merit is due.

I will simply say that there has not been a single instance where I have had my Tuyere put in use but it has given full satisfaction, and is recommended by all who have used them, as being superior to any other ever introduced. I would invite all to give them a trial; and the names of those using them being given, I hope it may induce others to try them; they recommend themselves.

Western Railroad Shop,	Springfield, Mass.
" "	Pittsfield, "
Connecticut val. "	Springfield, "
" "	N. Hampton, "
Hartford "	Hartford, Conn.
New Haven "	New Haven, "
Norwich and Worcester,	Norwich, "
N. York and N. Haven,	New Haven, "
Saratoga and Whitehall,	Saratoga, N. Y.
Vermont Central,	" "
Hudson and Berkshire,	Hudson, "
L. Kingsley,	Canton, Mass.

Hadley Falls Co. Ireland,	W. Springfield, Mass.
Sidney Patch,	Boston, "
Ames Manuf. Cor.,	Chickopee, "
American Machine w'ks,	Springfield, "
Dean, Packard & Mills	" "
G. Frank Bradley,	N. Haven, Conn.
Andrew Baird,	" "
Collis & Lawrence	" "
Slate & Brown,	Windsor Locks, "
Gage,	Nashua, N. H.
Machine shop,	Manchester, "
Louis F. Lanney,	Baltimore, Md.
J. H. Baerddid,	179 Chambers st. N. Y.
J. Fanning,	Rochester, "
G. W. Hunt	41 Gold st. "
Chamberlain & Waldo,	" "
P. S. Burges, carriage maker,	" "
Samuel Miller,	" "
J. Leggett,	Steverson falls, "
J. E. Harris,	Hillsdale, "
John L. Graham,	Albany, "
David Dalsell,	South Egremont, Mass.
Roy & Wilcock,	Berlin, Conn.

Agents for the sale of Tuyeres:  
B. B. Stevens in New York and Connecticut.  
A. J. VanAllen has the Agency for the Western and Southern States, and is now travelling through those States. Any communication addressed to the patentee will receive prompt attention.

E. HARRIS, Patentee,  
Springfield, Mass.

November 23, 1849.

### Railroad Lanterns.

COPPER and Iron Lanterns for Railroad Engines, fitted with heavy silver plated Parabolic Reflectors of the most approved construction, and Solar Argand Lamps; manufactured by

HENRY N. HOOPER & CO.,  
No. 24 Commercial St. Boston.

August, 16, 1849.

6m33

### Gas Fixtures.

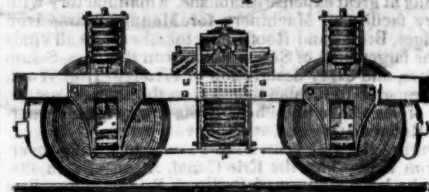
FIXTURES for Burning Gas for Lighting Public Buildings, Private Dwellings, Stores and Factories, manufactured by the subscriber in great variety. Orders by Mail, or left at the Factory on Causeway street, will be promptly attended to.

HENRY N. HOOPER & CO.

Boston, March 23, 1850.

6m13

### F. M. Ray's Patent India-rubber Car Springs.



India-rubber Springs for Railroad Cars were first introduced into use, about two years since, by the inventor. The New England Car Company, now possesses the exclusive right to use, and apply them for this purpose in the United States. It is the only concern that has tested their value by actual experiment, and in all arguments in favor of them, drawn from experience of their use, are in those cases where they have been furnished by this company. It has furnished every spring in use upon the Boston and Worcester road, and, in fact, it has furnished all the springs ever used in this country, with one or two exceptions, where they have been furnished in violation of the rights of this company; and those using them have been legally proceeded against for their use, as will invariably be done in every case of such violation.

The Spring formed by alternate layers of India-rubber discs and metal plates, which Mr. Fuller claims to be his invention, was invented by Mr. Ray in 1844. In proof of which we give the deposition of Osgood Bradley, of the firm of Bradley & Rice, of Worcester, Mass., car manufacturers, and men of the highest respectability. In this deposition, in relation to the right of parties to use these springs, he says:

"I have known Mr. Ray since 1835. In the last of May or the commencement of June, 1844, he was at my establishment, making draft of car trucks. He staid there until about the first of July, and left and went to New York. Was gone some 8 or 10 days, and returned to Worcester. He then on his return said he had a spring that would put iron and steel springs into the shade. Said he would show it to me in a day or two. He showed it to me some two or three days afterwards. It was a block of wood with a hole in it. In the hole he had three pieces of India-rubber, with iron washers between them, such as are used under the nuts of cars. Those were put on to a spindle running through them, which worked in the hole. The model now exhibited is similar to the one shown him by Ray. After the model had been put into a vice, witness said that he might as well make a spring of putty. Ray then said that he meant to use a different kind of rubber, and referred to the use of Goodyear's Metallic Rubber, and that a good spring would grow out of it." There are many other depositions to the same effect.

The history of the invention of these springs, together with these depositions, proving the priority of the invention of Mr. Ray, will be furnished to all interested at their office in New York.

This company is not confined to any particular form in the manufacture of their springs. They have applied them in various ways, and they warrant all they sell.

The above cut represents precisely the manner in which the springs were applied to the cars on the Boston and Worcester road, of which Mr. Hale, President of this road speaks, and to which Mr. Kneivitt refers in his advertisement. Mr. Hale immediately corrected his mistake in the article quoted by Mr. Kneivitt, as will be seen by the following from his paper of June 8, 1848. He says:

INDIA-RUBBER SPRINGS FOR RAILROAD CARS.—"In our paper yesterday, we called attention to what promises to be a very useful invention, consisting of the application of a manufacture of India-rubber to the construction of springs for railroad cars. Our object was to aid in making known to the public, what appeared to us the valuable properties of the invention, as they had been exhibited on trial, on one of the passenger cars of the Boston and Worcester railroad. As to the origin of the invention we had no particular knowledge, but we had been informed that it was the same which had been introduced in England, and which had been subsequently patented in this country; and, we were led to suppose that the manufacturers who have so successfully applied this material, in the case to which we referred had become possessed of the right to use that patent. It will be seen from the following communication, addressed to us by a member of the company, by which the Worcester railroad was supplied with the article upon which our remarks were based, that we were in an error, and that the springs here introduced are an American invention, as well as an American manufacture. How far the English invention may differ from it we have had no opportunity of judging."



# AMERICAN RAILROAD JOURNAL.

## STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

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### American Railroad Journal.

PUBLISHED BY J. H. SCHULTZ & Co., 136 NASSAU ST.

Saturday, May 25, 1850.

From the Ohio State Journal.

#### Central Ohio Railroad.

The pains which have been taken to manufacture public opinion in favor of other contemplated lines of railway, running east and west through Ohio, and especially some recent efforts to disparage the value, to Central, Western, and South-western Ohio, of the central Ohio line, will I trust be an apology for troubling you with some facts which if they do no good at present, may possibly be worth referring to hereafter.

While these several enterprises are yet in the gristle, and before any great expenditures are made upon them, it is important for the people of Ohio to survey the whole ground deliberately, choose carefully, and then drive to the goal energetically.

What are the elements that should be present to give assurance of success to railway projects in Ohio? *Geographical position—directness of line—economy of construction—control of local, as well as through traffic, and location and the public works away from the competition of navigable waters.*

In all these various elements I shall endeavor to prove that the Central Ohio line is not equalled by any in Ohio, and that there is none so deserving of the confidence and aid of the region it penetrates and is intended to benefit.

And in weighing properly the value of this line, I shall feel at liberty to introduce, as part of its capabilities, other lines, either built or projected—or which, from the topography and geographical relations of the country, will sooner or later be impelled into existence—and all of which must become tributaries to the "GREAT CENTRAL LINE," as it is emphatically called by the Baltimore company.

The charter for the Central Ohio railroad company was obtained in 1847. It was projected as the legitimate extension of the Baltimore and Ohio railroad west of the Ohio river, and as the medium of railway connexion between that road and the table lands of Central Ohio and Indiana. To accomplish this object, powers were conferred, extending from the Indiana state line, through Columbus, Newark, and Zanesville, to such point on the Ohio river as the directors may select.

The Baltimore company contemplates penetrating the valley of the Ohio by the ravine of either Fish or Grave creek, and thence run up the river to their legal terminus at the city of Wheeling.—That city wishes to compel the Company to adopt the Grave creek route, which strikes the Ohio valley eleven miles nearer Wheeling than Fish creek. The charter of the Central Ohio company, and the topography of the country admit of an advantageous junction with the Baltimore road at Wheeling, at Grave creek, or Fish creek, if the construction which may be placed upon the Virginia charter will admit of a junction by any road, with the Baltimore road, at any other point than Wheeling.

To accomplish a connection with the Baltimore road, three other Ohio lines were projected and companies chartered, viz: the "Cincinnati and Belpre," the "Franklin and Washington," and the "Central Valley." The two first were chartered when the Baltimore company was expected to strike the Ohio at Marietta or Parkersburgh. As the powers of the Franklin and Washington charter are suspended, by consent of the company, and will probably never be exercised, if the Central Ohio road be built, public attention is naturally directed toward the "Central Valley" and the "Cincinnati and Belpre" routes, as the rivals of the Central Ohio line with reference to a Baltimore connexion.

There are two other lines running east and west through Ohio, the respective friends of which have placed themselves as rivals to the Central line; but I think they have done so without reason. One of them—the Steubenville line—if built, may become an important auxiliary, and not a rival. The other—the Ohio and Pennsylvania line—will, as far west as Mansfield, have enough of its own legitimate traffic to support it, without being obliged to step out of the way, in a struggle for a traffic from Central, Western, and South-western Ohio, which it can never obtain except at ruinous sacri-

fices. The ungenerous effort of that company to hold back enterprises not in conflict with it, smacks very much of Pennsylvania policy.

#### Central Valley Route.

The route contemplated by the "Central Valley" charter starts from the "Central Ohio" line at Newark, passing through Coshocton and Cadiz, and reaching Wheeling at a distance of 127½ miles.—From the topography of the country intervening, and from the necessary dictates of economy, the actual point of divergence from the Central Ohio line will be 13 miles east of Newark, using, from Columbus to that point, 46½ miles of the Central Ohio road. From the point of divergence to Urichsville, a distance of 60 miles, the Valley route would run in the immediate neighborhood of the Ohio canal, and for the local trade of all that region, especially in heavy articles, it would be obliged to struggle with the competition of canal transportation. From Urichsville to Cadiz, if I am correctly informed, there is but little promise of way traffic. From Cadiz to the Ohio river, a distance of about 20 miles the country is more favorable.

Now when it is borne in mind that, with few exceptions, two-thirds of the entire profits of railways in the United States result from way traffic—and that this is more particularly the case with western railways—we see the importance of a location that shall control such traffic.

In this respect, how is the Central Valley route? Obviously unfavorable. Throwing off 20 miles east of Cadiz and 13 miles in the Central Ohio line, and there would be 94½ miles, or about three-fourths of the whole, which having but a limited local traffic, would be obliged to look for through traffic to support it. Where could that be obtained? By diverting it from the Central Ohio road? We shall see.

In the following table of comparative distances, we place three points of junction with the Baltimore road as being within the option of the Central Ohio company, and from which that company may compel the Central Valley line to rate its capabilities of competition:

#### Distances by Central Valley route:

From Newark to Wheeling, 127½ miles; to Grave creek, 139½ miles; to Fish creek, 150½ miles.

#### By Central Ohio line:

From Newark to Wheeling, 115½ miles; to Grave creek, 100 miles; to Fish creek 100 miles.

#### Differences in favor of the Central Ohio railroad:

From Newark to Wheeling, 12½ miles; to Grave creek, 39½ miles; to Fish creek, 50½ miles.

As (every thing else being equal) a long line cannot compete with a short one in the transaction of through business, and as this disparity is still more decided where the long line has but a limited local traffic, and the short line traffic at every step, we think it useless to continue the comparison. If, however, the spirited friends of the projected line through Steubenville should be able to force a di-

rect connexion with Pittsburgh, the union of the Steubenville interest with the equally spirited advocates of the Cadiz route might build a road from Ulrichsville down to the junction with the Central Ohio road; and this combination line, without diverting any through traffic from the Central road, would become a very important auxiliary to its business west of the junction.

#### Cincinnati and Belpre Route.

The Cincinnati and Belpre charter being short in line, a law was applied for, and allowed by the last Legislature, to extend its powers so as to reach the Baltimore road.

This Belpre route would lead the south western traffic from Cincinnati to the Baltimore road over the following distances:

To Hillsboro'	60
To Chillicothe	40
To Marietta	105
To Fish Creek	58
	263

In all probability the Baltimore company will be compelled to enter the immediate valley of the Ohio river at Grave creek, which is eleven miles further up than Fish creek, making the whole distance between Cincinnati and the Baltimore connexion 274 miles.

The traffic could reach the same points over the Little Miami and Columbus and Xenia railroads [already built, as against a corresponding distance on the rival line to be built] and the line of the Central Ohio railroad in the following distances from Cincinnati, viz:

To Columbus	119
To Zanesville	59½
To Fish or Grave creeks	77

255½ miles

Making a difference in favor of the Central Ohio line of 7½ miles to Fish creek and 18½ miles to Grave creek!

Should the full capabilities of the country be claimed, without regard to the lines at present chartered, I beg to suggest a route, that by natural indications, is the shortest and best, of which Cincinnati, struggling to make the Baltimore connexion, can possibly avail herself—a route traversing a region of unsurpassed agricultural capabilities, and rich already in the possession of an industrious and intelligent population—I mean the route thro' Circleville. Distance as follows, viz:

By Little Miami railroad to Morrow	40
To Circleville	66
To Lancaster	20
To Zanesville	36
To Fish or Grave creeks	77

239 miles.

Making by this route to Grave creek a difference of 35 miles against the Belpre line! The value to Cincinnati of this route (and the danger to Columbus) can only properly be appreciated by the startling consideration that it will furnish to the former city a railway connexion with Pittsburgh and the great Central Pennsylvania line thirty miles shorter than any line projected north of it, and fifty-five miles shorter than the route by the Cleveland road to the junction with the Ohio and Pennsylvania line, the only one likely to be built! The connection referred to would be over a projected line from Wheeling to Pittsburgh, for which a clear charter is already obtained, and three practicable routes, (none exceeding 62 miles) are ascertained to exist. Distances on the respective routes between Cincinnati and Pittsburgh, as follows:

By Mt. Vernon—	
To Columbus	119 miles.
To Loudonville by Mt. Vernon	70
Pittsburg	155

344 miles.

By Cleveland road and Mansfield—	
To Columbus	119 miles.
To Galion	70
To Pittsburgh	180

369 miles.

By Circleville—	
To Zanesville	163 miles.
To Wheeling	90
To Pittsburgh	62

314 miles.

When it is considered that the Circleville route to the Central Ohio line, and thence with that line, is the shortest practicable route between Cincinnati and both the Baltimore and Philadelphia roads, and one of them giving the shortest practicable line of travel to New York and Boston, I should look upon its adoption as conclusive now and forever, against the Belpre route, and as ominous to Columbus.

But to return to a comparison between the Central and the Belpre lines. To account for the Belpre line being a favorite with Cincinnati against a shorter line, we would naturally expect that it is superior to its shorter rival in other essentials.—Has it more favorable grades? No. Can it be more cheaply constructed? Not so cheaply. Is it far from the competition of canals or navigable waters? The line would have to be located for not less than 70, perhaps 81 miles along the banks of the Ohio river—probably the cheapest steam navigation in the world. Well then, has it not a decided superiority over the short line in the control of local traffic? The following table of the taxable property in the several counties along the respective lines, extracted from the last Report of the State Auditor, will answer that question, for property is usually a fair index of traffic.

Taking our divergence for both lines from the Little Miami railroad, we find the counties arranged as follows:

#### Belpre Line.

Clermont	\$6,534,215
Brown	5,363,762
Highland	5,553,814
Ross	10,247,961
Jackson	1,520,397
Athens	2,286,636
Washington	3,919,246
Monroe	2,572,397

\$37,998,424

#### Circleville and Central Ohio Line.

Warren	\$8,091,250
Clinton	4,467,533
Fayette	3,140,893
Pickaway	7,869,061
Fairfield	7,490,984
Perry	3,570,609
Muskingum	10,816,029
Guernsey	4,905,720
Belmont	7,248,624

\$57,600,703

Making a difference in the property list upon the two lines of nearly twenty millions of dollars, or 50 per cent. in favor of the short line! As however this argument is not intended to weigh against the value of a railroad from Cincinnati to Chillicothe (for so far a railway will be justified, and perhaps also in Jackson county, for the sake of iron and coal) a more just comparison would be made by taking the counties east of the Scioto river, on the respective lines. This would make a still more marked difference as follows:

#### Belpre Line.

Halt of Ross	\$5,122,980
Jackson	1,520,397
Athens	2,286,636
Washington	3,919,246
Monroe	2,572,397

\$15,422,652

#### Circleville and Central Ohio Railroad.

Half of Pickaway	\$3,924,530
Fairfield	7,496,984
Perry	3,570,609
Muskingum	10,816,029
Guernsey	4,905,720
Belmont	7,248,624

\$37,956,496

Making a difference in favor of the short line of more than twenty two millions of dollars, or upwards of 150 per cent. But worse yet—nearly one

half of the Belpre line east of Chillicothe passes along the banks of the Ohio river, and for about three fourths of the year the country, preferring the cheaper transportation of the river, would furnish to the railway no traffic at all!

I hope the friends of the Belpre route are satisfied.

So far as Columbus and Central Ohio are concerned in obtaining a connection with the Pennsylvania Central railway, I beg to submit the following comparison of distances between the Ohio and Pennsylvania and the Central Ohio lines, from Columbus to Pittsburgh.

#### Ohio and Pennsylvania Line.

By Cleveland road to Galion	70 miles.
To Pittsburgh	180

250 miles.

By Mt. Vernon (if ever built) to Loudonville	70 miles.
To Pittsburgh	155

225 miles.

#### Central Ohio Line.

To Zanesville	59½ miles.
To Wheeling	90
To Pittsburgh	62

211½ miles.

Making a difference in favor of the Central line of 13½ miles, even if the Mt. Vernon link should ever be made (which is not likely to be done, as the wants of the country do not demand it) and 38½ miles if the Cleveland road to Galion be the route to reach the Ohio and Pennsylvania road.

I trust I have said enough to prove that the Central Ohio railroad, when built, will furnish either in part, or over its entire length, the most desirable commercial outlet for Central, Western and South Western Ohio, and for the larger portion of the vast traffic which, between the Atlantic and the great West and South West, is destined forever to traverse the iron highways of our noble State.

Z.

Zanesville, May, 1850.

#### [Foreign Correspondence of the Railroad Journal.]

##### French Railways.

Paris, April 8, 1850.

The railroad from St. Etienne to Lyons, after that from St. Etienne to Loire, was the first established in France. The law authorising its construction was passed in June, 1826, the work was immediately commenced upon it, and its completion secured in about two years after. The object of constructing this road was to bring into market the mineral wealth of the region about St. Etienne, and this object has been realized to a degree far surpassing expectation. The cars upon this and the Loire road were at first drawn by horses or rude engines, such as had then been in use in the coal districts of England for many years. As improvements have been made from time to time in the motive power on railways, they have been introduced upon these roads, and yet the increased capabilities thus produced have hardly kept pace with the constantly augmenting business upon them. In 1848, there was in the single article of coal 700,000 tons transported over them, and the amount has probably been increased to 1,000,000 for the past year.

No railways for the transport of passengers were undertaken in France till after the opening of the Liverpool and Manchester railway had demonstrated the wonderful capabilities of this agency, not only for carrying passengers, but for every species of transportation. To M. Emile Periere is due the honor of having first called the attention of the French government to the subject. His efforts resulted in the authorization of the road from Paris to St. Germain July 1835. It was completed and opened for travel in August 1837. The success of



this undertaking forced the government to give some attention to the subject of railways, and the same year a commission was appointed to prepare the project of a law for a general system of railways, to be submitted at the ensuing session of the Chambers. A report was accordingly presented, in which the committee, upon urging with great force the importance of railways, proposed that the principal lines should be constructed and managed by the State, while those of secondary importance might be conceded to private companies. Upon the question of adopting this project, a contest ensued in which the party that had usually acted with the government opposed the measure, while the opposition party united with the government in the hope of carrying it.

The measure was now however defeated, and with its defeat, ended all efforts of the government to construct railroads for the next four years.—Meantime, private companies offered to construct roads upon their own resources, and in June of the same year after the defeat of the government measure in May, a company with a capital of 40,000,000 francs was authorised to construct the line from Paris to Orleans. This was regarded as one of the most important lines in the country, and had been placed first upon the list in the government project, just defeated.

We next find Lafitte, Blount & Co., in 1840, authorised to construct the line from Paris to Rouen, with a capital of 36,000,000 francs. The work was commenced in 1841, and by the aid of 3 loans from government, amounting in all to 23,000,000 francs, it was completed in 1843.

In 1842, the government, through its Minister of Public Works, M. Teste, presented to the Chamber of Deputies a plan for constructing a system of railways. It was proposed that the roads should be constructed by the government and companies acting together. The government was to purchase the lands, buildings and other property necessary to their construction, two-thirds of this expense to be paid by the departments through which the road passes, and the other one-third by the State. Companies were to grade and equip the roads, and to have leases from the government for working them, and appropriating the profits to themselves for a certain number of years, say 30, 50 or 99 years, as the case may be. At the expiration of the leases, unless renewed, the government was to pay to the companies the appraised value of their property, and take to itself the control and working of the roads.

This system contemplated the construction of six trunk lines, having Paris for a common centre.—The 1st, issuing from Paris in the direction of the Belgium frontier—the 2d, to one of the parts in the channel to connect with England—the 3d, to the ocean by a western port—the 4th, passing through the centre of France to the Spanish frontier—the 5th to the Mediterranean at Marseilles, and the 6th towards the Rhine by Strasbourg. This measure in its length and breadth was adopted by the Chambers, and became law, forming apparently the most auspicious period in the history of French railways. Maps published about this time spread out in lively colors this grand and well arranged plan, unfortunately not soon to be completed. The maps of 1850 showing the railways completed and in progress bear no traces of several of these lines. The whole scheme proved an utter failure. In the first place companies were unwilling to accept the terms prescribed, and in the next place the depart-

ments were at the time so heavily taxed, that they were far from seeking additional burdens, and the law, though unrepealed, has remained a complete dead letter. Not a single road has ever been constructed under it.

Most of the roads now completed have been made by companies, aided by the government. Some few have been built by government. The charters of the companies are not perpetual, but limited to a certain number of years. The leases, as they are called, were at first granted for 99 years, but more recently some have been restricted to 39 and 45 years. There are now 24 roads in France either completed or in process of construction, upon 1722 miles of which the cars now run, and the aggregate length of the whole when completed will be 2996 miles. The most important of French railways is that of the north, one branch of which strikes the channel at Boulogne, another Calais, and a third Belgian frontier at Valenciennes. It is 331 miles in length. The road to Havre and Dieppe is also an important one. A large portion of the trade between the United States and France passes over it to reach the packets for New York. There is very little that is peculiar in the French roads.—They are very substantially built on the narrow gauge (4 ft. 8½ in.) with double track. Most of the rails, particularly upon the roads last completed, are the U or bridge pattern, and are invariably laid upon the transverse sleeper. I have with much difficulty succeeded in getting data which may be regarded tolerably accurate, showing the cost of 17 roads 1,294½ miles in aggregate length, and which as will appear by the subjoined table, involved a total expenditure of \$155,748,175. The average cost per mile is \$128,240.

The passenger cars are similar to those of Germany, which I have before described, and upon some of the roads they are superior in style of finish to those upon any other roads in Europe. The merchandise cars are very similar to our own.—Everything upon the French railways is done with system. The greatest order and regularity prevail in every department. The employees of the roads are the most polite and gentlemanly to be found anywhere. The tickets are printed upon common colored paper, and upon the back contain the names of all the stations in the distance for which you have paid. A stranger finds this quite a convenience.

There is attached to each train a car appropriated to the transport of dogs, a thing peculiar I think to France. Dogs are not allowed in the cars with their masters or mistresses, and as almost every body here has a dog, this car is absolutely necessary. The fare for a dog is usually one-third to one-half that for a third class passenger.

The atmospheric railway from Vesinet to St. Germain is perhaps the best of the kind in the world, and worthy a word of remark. This species of railway was adopted to overcome the rapid ascent from Vesinet to St. Germain instead of employing a stationary engine. The distance is 11.5 miles, and the average ascent a little more than 1 ft. in 38 ft.

The machinery is worked by two powerful engines, which are placed near the summit of the ascent, one of which is sufficient for raising ordinary rains. When the trains arrive at Vesinet, the engine is detached and notice given by telegraph that all is ready. The piston which is attached to the former car being placed in a cast iron tube 18 inches in diameter, the engines exhaust their air

at the other end. Immediately the cars begin to move and the whole distance is passed in 3 minutes. In nearly 3 years that this road has been in operation, not the slightest accident has occurred. It may be worthy of consideration whether this mode of gaining elevation is not preferable to the usual stationary engine and ropes. The trains descend the plane by the force of gravity regulated only by the valve.

It can hardly be said at present that the prospect for further construction of railways in France is encouraging. The uncertainty which all seem to feel in reference to the future of France will pretty effectually prevent capitalists from embarking in these, or indeed in any enterprises. France is in a transition state—too much liberalized for a monarchy, not sufficiently enlightened for real republicanism, she enjoys the stability and prosperity of neither. She is now divided into factions, the leaders of which think far more of their own selfish ends than of their country's good, while the great masses wish for freedom, without knowing how to obtain it. I am not one of those who think France is to retrograde and finally sink to monarchy or despotism, but I am by no means sure that she is very soon to become thoroughly republican. It so much depends upon the men whom the people select to represent them, that if they chance to be in future as unfortunate as they have thus far been, the time is distant when we may expect to see the republic thoroughly and permanently established. It will not be till the people find among themselves men of sufficient ability to direct affairs and counteract the intrigues of their enemies. Most of those who have heretofore gained the suffrages of the people have proved false to the most solemn pledges made before election. They would blot out even the name of republic if they dared do it, and yet were elected with the most solemn protestations of devotion to it in their mouths. It is not difficult to see that while such treachery and want of confidence exist, little advance can be made in national prosperity. Capital as fast as accumulated will be invested where it will not be subject to so many contingencies. It will most likely go out of the country.

The Paris and Lyons road, portions of which are now in operation, and other parts partially built, has lately been given up by the government to companies, and its early completion we may hope is thus secured. After the immense sums expended by the State upon it, it would seem that companies might make a profitable business upon the terms granted. Beside this there is no other line of importance upon which there is a chance of much being done this season.

In the table below I have given the fares for the three classes of passengers upon 21 roads of 1498.5 miles in length, and I make the average for those of the first class 3.07 cts. per mile; the second class 2.31 cts. per mile, and the third class 1.77 cts. per mile.

I have also given the time of the direct or express trains upon such roads as run them, including the necessary stoppages. The average speed of these trains is 29 miles per hour. For the ordinary passenger trains I have taken the average of four trains for each road, and the general average proves to be 19 miles per hour, including stoppages. By reckoning the time in this manner, a very good idea is given of the speed which trains make in their ordinary business, and which I think will be found very little if any to exceed that of trains upon our roads of a single track. J. M. A.

	Length. miles.	Whole cost.	Cost per mile.	FARES.			TIME OF	
				1st class.	2d.	3d.	Ordinary trains.	Express trains.
Amiens to Boulogne.....	77	\$7,562,909	\$96,919	\$2 38	\$1 79	\$1 38	3 17	2 25
Andrezieux to Roanne.....	42-2	3,347,256	79,319	1 22	0 93	0 93	3 12	....
Avignon to Marseilles.....	74-5	14,007,884	188,020	2 53	1 76	1 18	3 57	3 02
Centre Orleans to Bourges and Chateauroux.....	142	16,813,250	178,403	3 98	3 05	2 26	6 32	5 15
North Paris to St. Quentin, Val- enciennes and Calais.....	321	34,928,324	108,811	7 47	5 63	3 14	15 34	10 40
Paris to Orleans.....	75-8	11,251,683	148,439	2 34	1 76	1 31	4 00	3 15
Orleans to Tours.....	70-8	8,468,199	119,607	2 10	1 66	1 22	3 55	....
Paris to Rouen.....	85	12,985,129	152,766	2 97	2 41	1 86	4 15	3 45
Paris to St Germain.....	13	4,822,280	370,944	2 79	2 32	2 32	0 35	0 30
Paris to Sceaux.....	7	837,000	119,571	0 18	0 16	0 11	0 25	....
Paris to Versailles (right bank).....	11-8	3,582,848	303,631	0 27	0 23	0 23	0 36	....
"    "    (left bank).....	10-5	3,343,626	318,440	0 37	0 27	0 23	0 31	....
Rouen to Havre.....	55-3	11,251,883	203,479	1 86	1 39	0 93	3 08	2 25
Strasbourg to Bale.....	87-6	8,656,514	98,818	3 13	2 72	2 03	5 11	4 34
St. Etienne to Lyons.....	36	4,597,351	127,704	0 46	0 46	0 46	3 05	2 55
Tours to Angers.....	67	6,532,633	97,502	2 07	1 56	1 16	3 40	3 00
Rouen to Dieppe.....	38	2,760,296	72,656	1 20	0 90	0 67	2 32	2 15
Mulhouse to Thann.....	13	.....	.....	0 40	0 31	0 23	0 41	....
Versailles to Chartres.....	44	.....	.....	1 30	0 97	0 74	2 14	....
Paris and Lyons—Paris to Ton- nere, Dizon to Chalons.....	165	.....	.....	5 00	3 84	2 85	8 28	6 23
Montrean to Froyes.....	62	.....	.....	1 91	1 43	1 06	3 37	2 58

Total number of miles.....	1,498-5
Total cost.....	\$155,748,175
Average cost per mile.....	\$128,240
Average fair per mile for 1st class passengers.....	3-07 cts.
"    "    "    2d class passengers.....	2-31 cts.
"    "    "    3d class passengers.....	1-77 cts.
Average speed of ordinary passenger trains—miles per hour.....	19
"    "    direct or express trains—miles per hour.....	29

#### REMINISCENCES OF THE NORTH RIVER—TRAVELLING, STEAMBOATS, &c.

In the year 1800, merchants residing a hundred miles or more from New York, and distant from the North river ten or fifteen miles, sent their bed and bedding to the landing from which they were to sail for the city, by a team, and themselves followed on horseback. At the landing, their bed, &c. was placed on board the sloop that conveyed their produce to market, and by it they took passage for the city. The horse was put to pasture or in the stable until their return, when the owner rode him home; and by the team that went for the merchandise the bed and bedding were returned. Such was the convenience of travelling at that day.

In November, 1806, five gentlemen associated themselves together for the purpose "of rendering the passage between Hudson and New York by water more expeditious, convenient, and pleasant to ladies and gentlemen travelling north and south through the state of New York, as well as to promote the interest of those concerned," (as expressed in the words of the agreement,) by building a packet of one hundred and ten tons burden, for the purpose of carrying passengers only. To accomplish this object, they bound themselves to each other to furnish the sum of six thousand dollars.—In accordance with this agreement, the superior packet sloop Experiment was built, and superbly fitted up with state rooms and berths, her whole length below decks, for the accommodation of passengers, and performed the passage between New York and Hudson in an unprecedented short space of time.

In January, 1807, some new names were added to the original subscribers, and a further agreement entered into to build another packet of the same class and for like purposes, to accomplish which the subscriptions were increased to twelve thousand dollars. This packet, like the first, was fitted up in style, and placed with the other on the North river; and at the time the two created quite an excitement. We have before us a bill and receipt for a passage on board one of these vessels 40 years ago. It is somewhat formal, and we give it at length as a curiosity, as it shows the manner in which things were done on the North river at that day. The passage referred to was performed in 27 hours:—

Sloop Experiment, Laban Paddock, master, for the accommodation of passengers on the North river, will sail from Hudson every Wednes-

day morning at 10 o'clock, and from New York every Saturday evening at 6 o'clock. And the same purpose, will sail from Hudson every Sunday morning at 9 o'clock, and from New York every Wednesday evening at 5 o'clock throughout the season.

On board the Experiment, Capt. Laban Paddock, May 2, 1810.	
Dr. I—P—	Dolls. Cts.
For passage and provisions from Hudson to New York.....	5 00
Spirits.....	.....
Madeira wine.....	.....
Port ".....	.....
Sherry ".....	.....
Porter.....	.....
Cider.....	.....
Punch.....	.....

Received payment in full,

ABISHA JENKINS.

In 1807, Fulton made his successful passage to Albany by steam, and in 1810 the old North river steamboat was performing the distance between Albany and New York in thirty-six hours; and Oliver Evans, of Philadelphia, was predicting that the person was then living who would see the distance between Philadelphia and Boston accomplished in three days. This individual made a number of useful improvements. He commenced a steamboat on the Delaware before Fulton, but had not the means to finish it. He was many years in advance of the age in which he lived, and finally died in New York about the year 1819.

The old North river boat, in her original construction, had a strange appearance. Her water wheels were without houses as at the present day; and cross heads connected with the piston, instead of the walking beam now in general use. The countryman, when he first saw her from Hudson, told his wife he had seen the devil going to Albany in a saw mill.

After the North River, the Car of Neptune was built, then the Lady Richmond, the Paragon, the Chancellor Kent, and others. Afterwards, lines were formed to New Brunswick, New Haven, and Providence, and to Charleston and New Orleans; and at a latter period, from Liverpool to Boston and New York, and from New York to Bremen.—Recently, Collins's splendid line of steamers from New York to Liverpool have commenced their trips. In the meantime, the Mississippi and the

great lakes are alive with steamers; and lines are forming to connect with Havre. Railroads are threading the country in every direction, even to competition with the north river. What is to be the end, for steam is yet but in its infancy?

In connection with the sloop Experiment was a project by the same parties to run a horse boat on the North river from Hudson to Albany, uniting at the former place with the sloops. This appears from articles of agreement entered into by the parties, which are now before us. This experiment was made in 1810, and proved a failure. There is reason to suppose the sloops proved profitable at first, but they were driven from the river by the steamboats. They were sold and a final settlement of their accounts was made in February, 1813.

Steamboats on the North river first performed their trips with wood. Lackawana coal was afterwards introduced, by which the expense of fuel was reduced from \$150 a trip to \$30. This was the commencement of a new era in steamboating, hardly less in importance than the original application of steam to boats.—[Sunday Times.

#### REPORT OF THE COMMISSIONERS APPOINTED TO INQUIRE INTO THE APPLICATION OF IRON TO RAILWAY STRUCTURES.\*

Continued from page 309.

It also appeared that, when motion was given to the load, the points of greatest deflexion, and, still more, of the greatest strains, did not remain in the centre of the bars, but were removed nearer to the remote extremity of the bar. The bars, when broken by a travelling load, were always fractured at points beyond their centres, and often broken into four or five pieces, thus indicating the great and unusual strains they had been subjected to.

We have endeavored to discover the laws which connect these results with each other and with practice, and for this purpose a smaller and more delicate apparatus was constructed to examine the phenomena in their simplest form—namely, in the case of a single weight traversing a light elastic bar. For the weight in its passage along the bar deflects it, and thus the path of trajectory of the centre of the weight, instead of being a horizontal straight line, as it would be if the bar were perfectly rigid, becomes a curve, the form of which depends upon the relation between the length, elasticity, and inertia of the bar, the magnitude of the weight, and the velocity imparted to it. If the form of this curve could be perfectly determined in all cases, the effects of travelling loads upon bars would be known; but, unfortunately, the problem in question is so intricate that its complete mathematical solution appears to be beyond the present powers of analysis except in the simplest and most elementary case—namely, in which the load is so arranged as to press upon the bar with one point of contact only, or, in other words, the load is considered as a heavy moving point. In practice, on the contrary, a single four-wheeled carriage touches each rail or girder in two points, and a six-wheeled engine, with its tender, has five or six points in contact on each side. This greatly complicates the problem.

The above smaller apparatus is so arranged as to comply with the simple condition that the load shall press upon one point only of the bar, and is also furnished with a contrivance by which the effects of various proportions of the mass of the bar to that of the load can be examined. From the nature of the problem, it is convenient to consider, in the first place, the forms of the trajectories that are described, and the corresponding deflexions of the bar, when the mass of the bar is exceedingly small compared with that of the load.

Having obtained these under different relations of the length of the bridge, its statical deflexion, and the velocity of the passing load, we proceed to investigate, in addition, the effect which a greater proportional mass of the bar or bridge has upon the deflexions. We have been greatly assisted in this research by a most elaborate and complete analytical investigation by George Stokes, Esq., Fellow of Pembroke College, Cambridge, undertaken at the request of one of the members of the commission. Unfortunately, the extreme difficulty of the problem has rendered its solution unattainable excepting in the cases in which the mass of the



bridge is supposed to be exceedingly small compared with that of the load, and in the opposite case in which the mass of the load is supposed to be small compared with that of the bridge. The examples that occur in practice lie between these two extremes; for in the experiments of the commission, performed at Portsmouth, with the inclined plane already described, the weight of the load was from three to ten times that of the bar; but this is a much greater proportion than that which occurs in bridges, partly on account of the necessity for employing in experiments very flexible bars, to render the changes of deflexion sufficiently apparent, and partly on account of the great difference in length; for if bars bearing the same ratio of weight to that of the load were employed in experiment, the deflexion would become so small as to be scarcely appreciable. This will readily be perceived when it is stated that, in a bridge 33 feet long, a deflexion not greater than one-fourth of an inch is usually allowed, which deflexion is only 1/1440th part of its length; whereas, in experiment, it is necessary to employ deflexions of two or more inches. In actual bridges of about 40 feet span, the weight of the engine and tender is very nearly the same as the weight of that half of the bridge over which it passes; and in large bridges the weight of the load is much less than that of the bridge.

Mr. Stokes has shown that, when the inertia of the bridge is supposed small, the trajectories of the load and the corresponding deflexion of the bridge depend upon a certain quantity, which he terms  $b$ ; this quantity varies directly as the square of the length of the bar, and inversely as the product of the central statical deflexion, (namely, that which would be produced by the load set at rest on the centre of the bridge,) and of the square of the velocity with which the load passes over the bridge. When  $b$  is small, the increase of deflexion due to the velocity of the load becomes very great, so much so that if  $b$  be equal to 1/3, the statical deflexions are doubled, and are tripled when  $b = 0.8$ ; becoming still greater as lesser values of  $b$  are taken. On the contrary, greater values of  $b$  correspond to small deflexions; and it has been shown by our researches, that, in the cases of real bridges,  $b$  is rarely less than 14, and is commonly very much greater; and that, consequently, the greatest increase of deflexion from velocity would be, upon this theory, never greater than one-tenth, varying from that to one-hundredth, or less. As  $b$  varies directly as the square of the length of the bridge, it is plain that the nine-foot bars of the Portsmouth experiments will correspond to much less values of  $b$  than the 20 and 30-foot lengths of actual bridges; while the values of  $b$  in the former cases are still further diminished by the greater deflexions necessarily employed in experiments, as above explained. It is thus shown that the enormous increase of deflexion produced by velocity in the Portsmouth experiments cannot occur with real bridges, since it appears that the Phenomena in question are developed to a great extent when the magnitude of the structure is diminished. But these calculations are made upon the supposition that the inertia of the bridge is very small; and experiments made with the small apparatus above mentioned have shown that, while  $b$  is less than about unity, the inertia of the bridge tends to diminish the deflexion; while, on the other hand, when  $b$  is greater than unity, (including of course, all practical cases,) the inertia of the bridge tends to increase the deflexions, obtained upon the above supposition. Lastly, the total increase of the statical deflexion, when the inertia of the bridge is taken into account, will be found much greater for short bridges than for long bridges. Supposing, for example, the mass of the travelling load and of the bridge to be nearly equal, the increase of the statical deflexion at the highest velocities, for bridges of 20 feet in length, and of the ordinary degree of stiffness, may be more than one-half; whereas, for bridges of 50 feet in length, the increase will not be greater than one-seventh, and will rapidly diminish as greater lengths are taken. But as it has been shown that the increase *ceteris paribus* is diminished by increasing the stiffness of the bridge, we always have it in our power to reduce its amount within safe limits. Hence in estimating the strength of a railway bridge, this increase of the statical deflexion must be taken into account, by calculating it from

the greatest load which is likely to pass over the bridge, and from the highest possible velocity. It must be remembered, also, that this deflexion is liable to be increased by jerks produced by the passage of the train over the joints of the rails.

We also made some experiments by means of the large apparatus before mentioned, on curved bars, and these bore much greater weights at high velocities than straight bars; but the deflexions of these bars were very great compared with their length. In drawing attention to these experiments, we would remark that, in actual structures, where the deflexions are so very small, the effect of cambering the girders, or of forming a curved pathway for the load, would be of less comparative importance, and might tend to introduce practical inconvenience.

The general impression among engineers appears to be at variance with the above results. They, for the most part, state their belief that the deflexion caused by passing a weight at a high velocity over a girder, is less than the deflexion which would be produced by the same weight at rest;—even when they have observed an increase, they have attributed it solely to the jerks of the engine or train, produced by passing over inequalities at the junction of the rails, or other similar causes.

For the purpose of examining this question, we have submitted two actual bridges to the test of experiment. These bridges, one of which, the Ewell Bridge, is situated upon the Croydon and Epsom line, and the other, the Godstone Bridge, upon the South Eastern line, are both constructed to carry the railway over a road. A scaffold was constructed, which rested on the road, and was, therefore, unaffected by the motion of the bridge, and a pencil was fixed to the underside of one of the girders of the bridge, so that when the latter was deflected by the weight of the engine or train, either placed at rest or passing over it, the pencil traced the extent of deflexion upon a drawing board attached to the scaffold. An engine and tender, which had been in each case liberally placed under our orders by the directors of the companies, were made to traverse the bridges at different velocities, or rest upon them at pleasure. The span of the Ewell Bridge is 48 feet, and the statical deflection due to the above load rather more than one-fifth of an inch. This was slightly but decidedly increased when the engine was made to pass over the bridge, and at a velocity of about 50 miles per hour, an increase of one-seventh was observed. As it is known that the strain upon a girder is nearly proportional to the deflexion, it must be inferred that, in this case, the velocity of the load enabled it to exercise the same pressure as if it had been increased by one-seventh, and placed at rest upon the centre of the bridge. The weight of the engine and tender was 39 tons, and the velocity enabled it to exercise a pressure upon the girder equal to a weight of about 45 tons. Similar results were obtained from the Godstone Bridge. We would take this opportunity of mentioning how much we are indebted to Mr. P. W. Barlow, and Mr. Hood, for the assistance they afforded us in making these experiments.

We have also to express our obligations to the Astronomer Royal, for the advantage of his presence during the above and other experiments, as well as for many valuable suggestions during the progress of the inquiry.

In addition to the above experiments, we have made many for the purpose of supplying data for completing the mechanical theory of elastic beams. If it be in any manner bent, its concave side will be compressed, & its convex side extended. An exact knowledge of the laws which govern its compression and extension must precede any accurate general theory of its deflexions, vibrations, and ruptures.

The law which is usually assumed in mathematical investigations, and by which the longitudinal compressions and extensions, within certain limits, are assumed to be directly proportional to the forces by which they are produced, although very nearly true in some bodies, is not, perhaps, accurately true for any material.

Experiments have, therefore, been made to determine with precision the direct longitudinal extension and compression of long bars of cast and wrought iron. The extensions were determined by attaching a bar, 50 feet in length and 1 inch

square, to the roof of a lofty building, and suspending weights to its lower extremity.

The compressions were ascertained by enclosing a bar, 10 feet long and 1 inch square, in a groove placed in a cast iron frame, which allowed the bar to slide freely without friction, and yet permitted no lateral flexure. The bar was then compressed by means of a lever loaded with various weights.—Every possible precaution was taken to ensure accuracy. The following formulæ were deduced for expressing the relation between the extension and compression of a bar of cast iron, 10 feet long and 1 inch square, and the weights producing them respectively:

$$\text{Extension, } w = 116117e - 201905e^2$$

$$\text{Compression, } w = 107763d - 36318d^2$$

And the formulæ deduced from these for a bar 1 inch square, and of any length, are—

$$\text{For extension, } w = 13934040 \frac{e}{l} - 2907432000 \frac{e^2}{l^2}$$

$$\text{For compression, } w = 12931560 \frac{d}{l} - 522979200 \frac{d^2}{l^2}$$

Where  $l$  is the length of the bar in inches.

These formulæ were obtained from the mean results of four kinds of cast iron.

The mean tensile strength of cast iron derived from these experiments is 15,711 lbs. per square inch, and the ultimate extension 1/600 of the length, and this weight would compress a bar of iron of the same section 1/775 of its length. It must be observed that the usual law is very nearly true for wrought iron.

Many denominations of cast iron have got into common use, of which the properties had not yet been ascertained with due precision. Seventeen kinds of them have been selected, and their tensile and crushing forces determined. Experiments have also been made upon the transverse strength and resistance of bars of wrought and cast iron acted upon by horizontal as well as vertical forces.—These experiments will be found to exhibit very fully the deflexions and sets of cast iron, and the defect of its elasticity.

To be continued.

#### LAKE SUPERIOR COPPER REGION.

We find in the Lake Superior Journal a communication, signed by Charles Whittlesey, Esq., giving an account of the mining operations in that quarter for the past year, from which we extract the following:

"You and your readers will doubtless wish to know how affairs are progressing in the mining way. To commence with the Minnesota, of which S. O. Knapp, Esq., has charge; they employ about 80 hands; they are this winter chiefly engaged in opening this mine which had in fact been delayed too long for the laudable purpose of getting out last summer what copper could be reached. They will not, I think, have much copper out the coming spring; but will have made a very good commencement towards opening their mine, having newly completed an adit which will competently drain their surface water. They have three shafts down to the depth of some 60 or 90 feet and will this week complete a level connecting the lower part of the middle and east shaft; they are also running a level from opposite this one to the lowest shaft. There is a very good show in the east shaft from which they have taken two masses of a ton each, and they are now stoping from the middle shaft on the lower level. They are commencing the erection of a steam saw mill, and will shortly commence their stamp works, having now about 700 tons of stamp work out.

The Forest Mining Co., formerly known as Col. Cushman's Ontanagon Co., employ about fifteen hands, and have sunk and drifted on the vein in all about 90 feet, besides running an adit of some 30 feet in working this vein which is five or six feet between the walls. They remove nothing but the vein, this works very kindly two shifts, drifting nearly 30 feet in one week, presenting a good show, and having taken out some very good stamp and barrel work. Mr. Stevens has charge of this company. The mineral of the vein is mostly Epidote. The Ridge Mining Co., of which Mr. Chandler

has charge, is working a vein of the same character as the Forest mine. The Indian works upon this location are well defined—there is a mass of some hundreds of pounds exposed. Mr. Chandler is working this vein by drifting upon it—he commenced work late last fall and under very adverse circumstances, and has prosecuted his operations with much energy—the locality is a promising one. This company works about six hands.

About the same force is employed upon the Adventure Mining Co., under a contract to Mr. Spalding. The copper appears to accompany the drift of about 70 feet almost constantly; but the vein is destitute of walls of any kind. This location abounds in shows of copper; indeed there seems to be a difficulty to determine between the different prospects, as on the last named Indian digging are frequent. The Pittsburgh people have recently bought half of the stock of this company for \$10,000.

The Douglass Houghton Co., of which Mr. C. C. Douglass is agent, employs about ten hands.—This company is to work upon what, so far as I am aware, is one of the best defined veins in the country. He has drifted about 70 feet and taken out much excellent stamp work and masses of native copper weighing from 400 lbs. downwards—he commenced late last fall and is doing a first rate business.

The Ontanagon Mining Company of Michigan, of which I have charge, employ ten hands. They own the south half of the location upon which the Minnesota mine is situated. They commenced work late last fall, and have been mainly employed in building, cutting roads, clearing, etc., preparatory to a thorough examination of their very promising location the coming spring. They are at present working a well defined vein of copper in Prehnite and Epidote, from which masses of copper of several hundred weight have been raised. This vein has a very regular foot wall with the same dip and course as the vein of the Minnesota Co."

#### The States.

In the course of a speech recently delivered in the House of Representatives by the Hon. S. R. Thurston, he gave this information in relation to the extent of the various States of the Union in square miles:

Maine.....	35,000	Delaware.....	2,120
Vermont.....	8,000	Maryland.....	11,000
New Hampshire.....	8,030	Virginia.....	61,352
Massachusetts.....	7,250	North Carolina.....	45,500
Rhode Island.....	1,250	South Carolina.....	28,000
Connecticut.....	4,750	Georgia.....	58,000
New York.....	46,000	Kentucky.....	37,680
New Jersey.....	6,850	Tennessee.....	44,000
Pennsylvania.....	47,000	Louisiana.....	46,431
Ohio.....	39,964	Mississippi.....	47,147
Indiana.....	33,809	Alabama.....	50,712
Illinois.....	55,405	Missouri.....	67,380
Michigan.....	56,243	Arkansas.....	52,198
Iowa.....	58,914	Florida.....	59,268
Wisconsin.....	53,294		
Total free States.....	454,340	Tot'l slave States.....	610,796
California.....	145,000	Texas.....	325,521
	599,340	Dist of Colum'a.....	50

Free States..... 599,340

337,028

#### Charcoal Melted.

The possibility of melting charcoal has at length been satisfactorily proved by the experiments of M. Despretz, of Paris. Up to the present time, chemists have considered this an impossibility; M. Despretz, however, not only completely melts this refractory substance, but solders one piece to another, and even volatilizes it. The heat to effect this purpose is generated by a powerful galvanic battery; the light and heat evolved is so great that, even in approaching it, only for an instant, there is danger of violent headache and pain in the eyes. To avoid this the operator conducts his experiments un-

der the shade of thick blue glass. Platinum clippings, and other metals difficult to fuse, are readily converted into a solid mass. This will prove of great service in the arts, and we hope that he will be able to make diamonds, so as to destroy all the attributable value of these baubles.

#### Comparative Statement of the Receipts of Cotton at the Ports, to the latest dates.

	1850.	1849.
New Orleans, May 7.....	744,767	1,016,954
Mobile, May 3.....	312,219	491,451
Florida, May 1.....	156,402	181,225
Texas, May 1.....	24,945	28,132
Savannah, May 7.....	283,088	343,426
Charleston, May 9.....	312,078	406,553
North Carolina, April 27.....	8,705	8,425
Virginia, May 1.....	8,625	11,235
	1,851,829	2,487,401

Decrease..... 635,572 bales.

#### Comparative Exports to Foreign Ports, to latest dates.

	1850.	1849.
New Orleans, May 7.....	451,940	737,469
Mobile, May 3.....	157,441	322,224
Florida, May 1.....	35,838	63,133
Texas, May 1.....	513	2,495
Savannah, May 7.....	105,751	172,533
Charleston, May 9.....	161,744	238,559
Virginia, May 1.....	—	350
New York, May 1.....	165,731	192,396
Other ports, May 1.....	1,604	5,767
	1,080,562	1,734,926

Decrease..... 654,364 bales.

#### Stock on hand at the Ports, and on Shipboard, not cleared.

	1850.	1849.
New Orleans, May 7.....	146,343	189,406
Mobile, May 3.....	82,765	79,327
Florida, May 1.....	25,510	26,248
Texas, May 1.....	726	3,959
Savannah, May 7.....	37,651	35,020
Charleston, May 9.....	59,479	44,591
North Carolina, April 27.....	475	395
Virginia, May 1.....	900	1,000
New York, May 1.....	129,211	87,598
	483,060	467,553

Increase..... 15,507 bales.

#### Stocks of Cotton in the Interior Towns, not included in the receipts.

	1850.	1849.
Augusta and Hamburg, May 1.....	61,825	41,772
Macon, Ga., May 1.....	15,514	12,872
Columbus, Ga., May 4.....	7,877	—
Griffin, Ga., April 1.....	2,595	—
Montgomery, Ala., Apl. 27.....	7,750	3,311
Memphis, Tenn. April 30.....	7,402	—
Columbia, S. C., April 1.....	10,490	10,245

#### Telegraphic Communication with Europe.

John A. Roebling, Esq., well known throughout the country as a skilful engineer, has submitted a proposition through the Journal of Commerce, for opening a telegraphic communication between this country and Europe. The following is an abstract of the plan proposed:

The grand object to be attained is one unbroken length or continuity of wire. To secure this it must be laid upon the bottom of the sea. Once there, it will be safer from all interruptions whatever than any land telegraph. And since the ocean is not more than three or four miles deep in the deepest part, it is very certain that the thing can be done. There is no physical impossibility, nor any unusual difficulty about it. He proves that money will do it, and a very moderate amount of money, too, when compared with the grandeur of the result. He proposes to lay down a wire rope of 20 strands, No. 14 wire, isolated from each other, so that 20

distinct machines could be operated, and 20 messages sent at the same time. It will take eight miles in length of this rope to break by its own weight in the water; therefore it could not break upon being let down into the deepest part of the ocean. The wire rope is to be coated with gutta percha, and to be reeled off from steamers employed for the purpose. He says:

"Thus prepared and sunk upon the bottom of the ocean, it is difficult to assign a limit to its duration. The weight of one mile of rope, manufactured in the manner described, will be one gross ton; its cost on board the steamer I estimate at \$250. This would make \$875,000 for 3500 miles; the whole distance from New York to England, via Boston and New Foundland, with allowances. The cost of chartering, equipping for the service, and running two steamers one trip, including the erection of station houses at the landings, telegraphic machines, etc., ready for operation, I estimate at \$425,000, which will swell the total cost of this most magnificent enterprise to \$1,300,000."

He estimates the profit on the investment at 25 per cent., which is much within the mark, if any such telegraph is ever constructed. To test it, he proposes that the wire rope should first be laid to Newfoundland—one third of the whole distance to England from New York.

This may be practicable—we cannot believe it to be so. Suppose the vessels engaged in reeling off the line, encounter a violent storm, and are driven off from their course, how are they to hold on to it? If any accident should happen to any part, the whole becomes useless. Now the bottom of the ocean is known to be uneven, like the surface of the land. Suppose that the sharp top of some submarine precipice catches the wire, and sustains its whole weight for a great extent of it. Nothing is more likely in such a case, than that the coating would get cut or worn off, in which case the usefulness of the whole is destroyed. Who knows but that there are myriads of marine living creatures who would attack this coating, and destroy it in a very short time; any other supposition is hardly possible.

It is difficult to keep lines of telegraph that are above ground in order for a day. We think if such be the case, that we shall have some difficulty in keeping that in working order which has been deposited in "that bourne from which no traveller returns."

We now go to Europe in ten days in steam ships. This is short time enough in all conscience; as far as our telegraphs are concerned, let us stick to dry land.

#### Mining in the United States.

Messrs. Foster & Whitney, who were last year appointed to conclude the survey of the U. States copper lands on Lake Superior, by Mr. Secretary Ewing, have completed their labors and have just made their report. It was sent to the House yesterday, or will be sent in a day or two. The report contains a full account of the Mining Region of the Lake Superior country, with some valuable historical details, and statistical tables upon the mining interest of the country and the world. It appears that these copper mines were once worked by an ancient people, the evidence of whose labors exist for a hundred miles along the southern coast of the lake. Tumuli are found, and the opinion is expressed by Messrs. Foster & Whitney that the same people who erected the western mounds worked the copper mines of Lake Superior. Curious facts are adduced in support of this hypothesis. The Jesuits were there as early as 1663, and an accurate map of the country was made by them in 1672, a copy of which is appended to the report, as a striking evidence of the extent and thoroughness



of their explorations of that remote country at so early a period of our history as when Elliot was a missionary among the Aborigines of Massachusetts.

The report shows the significant fact that the annual mining productions of the United States at this day, exceed in value the mineral products of any other country. This is excluding coal. The United States, as a nation, stand at the head of the mining interest. This is an important fact, when taken in connection with a movement that has been agitated here during the winter, to appoint a Metallurgic committee to visit Europe with a view to collect and embody in a report the knowledge at present existing in relation to the whole subject of practical mining—a work very much needed in this country at this opening and important era in our mineralogical history.

The report of Messrs. Foster and Whitney further shows that the entire annual consumption of copper in this country is about 5,000 tons, and that the Lake Superior mines already produce 2,000 tons, and in five years will produce as much as is now the total annual consumption of the country.

The iron district of the lake is now about to be more thoroughly explored by these gentlemen, and a report upon that subject may be expected hereafter. The principal iron region covers a country of about fifty by twenty five miles, and is of exceeding richness, besides possessing great facilities for working. The advantages are alleged to be much greater than are to be found in the great iron mountain of Missouri.

#### Pennsylvania.

**Lehigh Coal and Navigation Co.**—We have received the annual report of the Board of Managers of this company, submitted on the 7th inst. From this it appears that during the year 1849 the quantity of coal shipped on the canal was—

	Tons.
From the company's old mines, and from the slope and the tunnels recently bro't into operation.....	276,501
From the Room Run mines.....	102,784
<b>Total from the company's mines.....</b>	<b>379,285</b>
“ Beaver Meadow “.....	73,961
“ Spring Mountain “.....	102,599
“ Hazleton “.....	92,480
“ Cranberry “.....	36,153
“ Sugar Loaf “.....	11,359
“ Buck Mountain “.....	85,819
“ Wyoming Valley, via White Haven.....	19,590

Whole quantity..... 801,246  
Being an increase of 120,500 tons over the production of the previous year.

The total amount of freight both ascending and descending, carried on the canal during the year, was 963,960 tons.

The estimate of the business of the canal in the shipment of coal during the current year is considerably beyond that of last year—the production of the Lehigh region being set down at not far short of 900,000 tons.

Alterations and improvements in the planes of the work are being made, and will, it is expected, be completed in season for the opening of the spring business in 1851. This will enable Lehigh boats to go through the canal full loaded, without the necessity of uncoupling the sections of the boats at the foot of each plane.

The debt of the company has been decreased during 1849 by the sum of \$269,425 34.—*Pottsville Journal.*

**Leggett's Gap Railroad.**—The Honesdale Democrat announces that this work has been commenced, by breaking ground in Abington township, Wyoming county, Pa., at the summit between the Lackawana and Tunkhannock creeks. The prospects of its completion are not at present very promising. The Ithaca and Owego railroad, which belongs to the Leggett's Gap company, has been placed in complete repair, and when the new improvement is made, there will be a direct line of travel between the Lackawana coal fields and the New York and Erie railroad.

**The Union Canal.**—We learn from the Lebanon courier, that preliminary steps are now being taken for the enlargement of this important link between the Schuylkill and the Susquehanna. It is the intention of the company to proceed as far as possible before stopping the navigation, which they expect to do in October. They design having it so far completed as to be ready for opening with the first spring business. We are glad to hear that the company is in so prosperous a condition, which speaks well for those to whom its management is entrusted. It has been able to obtain a loan on terms much more favorable than has been done by any similar corporation we know of, which shows that it enjoys public confidence. We feel some considerable pride in this company, as we believe it was the first enterprise of the kind commenced in this State, and one of the first of the country.

**Reading Railroad.**—The receipts of this road for the last five months have been \$644,443, against \$411,499 last year same time, showing an increase of \$232,944. This highly favorable condition of the road has occasioned the late rise in the stock. The comparative receipts of the five months have been as follows:

	1849.	1850.
December, 1848.....	\$82,661 77	\$136,550 51
January.....	76,667 96	96,439 74
February.....	78,710 67	96,797 48
March.....	101,236 00	125,448 87
April.....	72,223 35	189,166 81
<b>Total.....</b>	<b>\$411,499 75</b>	<b>\$644,443 41</b>
Excess \$232,944, or nearly 60 p. cent.		

The receipts have been derived from the following sources:

	1849.	1850.
Travel.....	\$54,376 35	\$52,995 30
Freight mdse.....	47,515 98	50,107 34
Freight coal.....	303,526 64	535,072 31
Mails.....	3,916 66	3,916 67
Miscellaneous.....	2,164 12	2,351 79

**Total.....** \$411,499 75 \$644,443 41

The result of these five month's business has been as follows:

Aggregate receipts.....	\$644,443 41
Deduct freight on shipping coal, &c.....	\$19,357 30
Expenses, repairs, &c.....	367,177 94
<b>Net profit.....</b>	<b>\$258,907 87</b>

During the same period of last year the aggregate

Receipts were.....	\$405,287 72
Expenses, &c.....	395,487 40
<b>Net profit.....</b>	<b>\$9,850 32</b>

#### New York Railroad Law.

**The General Railroad Act.**—This important law, recently enacted, consists of fifty-two sections, and fills five and a half columns of the Albany Argus. Its principal provisions are as follows:

It authorizes any number of persons, not less than twenty five, to associate for the purpose of

constructing and operating railways—the amount of capital stock not to be less than \$10,000 for every mile of road proposed to be constructed. When the articles of association are filed in the office of the Secretary of State, the stockholders shall be possessed of such powers as are granted to corporations, but these articles shall not be filed until at least \$1,000 of stock for every mile of the proposed road is subscribed, and 10 per cent. paid in.

Every corporation formed under this act shall have a board of thirteen directors, chosen annually. The stock of such companies shall be deemed personal estate, and be transferable. Each stockholder shall be individually liable to the creditors of the company in a sum equal to the amount unpaid on the stock held by him.

The bill minutely describes the manner in which title may be acquired to real estate required for the purpose of the company in relation to the purchase of which the parties may be unable to agree. Upon a petition being presented to the Supreme Court, held in the district in which the real estate described is situated, praying for the appointment of commissioners of appraisal, the court shall appoint commissioners from persons named by the company and the owners of the real estate proposed to be taken, to determine the compensation which ought justly to be made.

Before constructing any part of their road, every company formed under this act shall make a profile of the route intended to be adopted, to be filed in the office of the clerk of the county in which the road is to be made, and the company shall give written notice to all occupants of the land over which the route of the road is so designated.

The directors of every company formed under this act may, by a vote of two thirds of their whole number, at any time alter or change the route, or any part of the route of their road, if it shall appear to them that the route can be improved thereby.

No company formed under this act shall lay down, or use in the construction of their road, any iron rail of less weight than fifty six pounds per lineal yard, except for turnouts, sidings and switches.

In addition to powers conferred on corporations in the 3d title of the 18th chapter of the 1st part of the Revised Statutes, companies formed under this act shall have power to cause necessary examinations and surveys for it proposed road to be made; to take and hold grants of real estate on other property; to purchase and use all such property as may be necessary for the construction and maintenance of the road; to construct their roads across, along or upon, any street, stream, plank road or canal, to intersect or join its railroad with any other railroad before constructed, etc.

Whenever the railroad of any company formed under this act shall run parallel or nearly parallel to any canal of this State, and within thirty miles of such canal, the company owning such railroad shall pay to the canal fund, on all property transported on its railroad, other than the ordinary baggage of passengers, the same tolls upon that portion of the road running parallel to the canal that have been payable to the State, if such property, other than baggage, had been transported on any such canal.

Every corporation formed under this act shall make an annual report, to be filed in the office of the State Engineer and Surveyor.

The Legislature may alter or reduce the rate of freight, fare, or other profits of such roads; but not to such an extent as to produce, with said profits, less than 10 per cent. per annum on the capital actually expended. An such corporation shall, when applied to by the Postmaster General, convey the mails of the United States on their roads or routes respectively; and in case such corporation shall not agree as to the rate of transportation therefor, and as to the time, rate of speed, etc., it shall be lawful for the Governor of this State to appoint commissioners, who shall determine and fix the prices, terms and conditions aforesaid—but such price shall not be less for carrying the said mails in the regular passenger train than the amount which such corporation would receive as freight on a like weight of merchandise, transported in their merchandise train, and a fair compensation for the postoffice car. All existing railroad corporations within this State, shall respectively have and

possess all the powers and privileges contained in this act. This act to take effect immediately.

## AMERICAN RAILROAD JOURNAL.

Saturday, May 25, 1850.

### The Pacific Railroad

We see that Mr. Benton has introduced into the Senate a bill for the grant of public lands in Missouri to aid in building the contemplated railroad from St. Louis to the western line of that State. Should the Missouri route be found to be the most favorable for the above road, the construction by this State of that portion of it within her territory, will shorten so much the extent of line to be built by general government, and relieve it of any embarrassment that might arise from the construction of public works within the limits of the States.

The subject of a railroad to the Pacific seems to possess but very little interest for Congress. We are much disappointed at this, but we presume it receives as much attention as does any subject for the promotion of the general good. The next national legislature we hope to see more imbued with the spirit which pervades the whole country, and turn its attention to the promotion of its real interests. It is very remarkable that while the encouragement of all the useful arts of life is daily accu-  
pying more and more the public mind—that while the class of educated young men, who formerly took up one of the “learned professions” as the business of life, are turning their attention very generally to the physical sciences and to mechanical pursuits—and while so many distinguished men are quitting politics and are dedicating themselves to the promotion of works of public utility—that our chief legislative body should so remove itself, year by year, further from anything that is useful, should give up so much time to abstract speculations, to frivolous and personal quarrels, or to the accomplishment of petty personal and selfish schemes, as to be viewed with general disgust and contempt.—How feebly does the general government represent either the character, pursuits, or wishes of the people. Cannot some means be devised to make the government a part and parcel of the whole country?

To the Editor of the Railroad Journal:

DEAR SIR: At page 338 of the Journal for 1849 a plate was inserted showing my application of Mr. J. E. Smith's patent for laying India-rubber under the joints of rails, also a few remarks on the subject, and considering its great utility and importance in the construction and maintenance of railroads, I am surprised that I have not seen any further notice of it.

In the summer of 1848 I relaid, with new iron, one track of the New Orleans and Carrollton railroad, and adopted the plan of joint chair, and application of India-rubber, shown in the plate referred to, the drawing being one-half the actual size of both rails and chairs used; and I now can state, that after nearly two years of constant transit over the road, of heavy loads of passengers, drawn by 12-ton engines, I find the joints as perfect as when first made, there is no jingling or clinking in passing over them, in fact it is impossible to tell when one is crossed. The rails are firm in their places and the road has not needed the slightest repair since its construction. With this I send you a piece of the rubber that has been under a joint for the time stated. It was taken up five or six days ago at a place where the insertion of a new switch became

necessary. The rails instead of being “hammered into notches in their chairs,” (see “Railway Progress,” page 259 of Journal for the present year,) were not even marked. I look upon this plan as having solved the problem of a good joint, and of course a considerable advance in reducing the cost of “maintenance of permanent way,” also in that of carriage and engine repairs, as well as in the expenditure of fuel. For the details of the expense and method of using the rubber, I refer you to my letter to Mr. J. E. Smith, attached to his advertisement, and inserted in the page and Journal first mentioned.

I am so well satisfied with this use of India-rubber, that I am urged to send this as a contribution to the general stock of knowledge on railroad construction.

I am respectfully yours, etc.,

JOHN HAMPSON,  
Eng. N. O. & C. R. R.

Carrollton, La., May 11, 1850.

### Ohio and Pennsylvania Railroad.

We learn from the Pittsburgh Gazette that “the grading and masonry of the Ohio and Pennsylvania railroad, from the State line to the intersection of the Cleveland railroad, was let at Salem on Thursday last, to responsible contractors, at rates materially lower than the original estimates of Solomon W. Roberts, Esq., the Chief Engineer. The number of bidders in attendance was large, and the competition highly spirited. The work let comprises thirty two sections, making nearly thirty four miles; and, with the exception of three or four sections, it is generally light. It is to be completed by the first of April next. With the exception of the work immediately adjoining Allegheny city, the whole of the Eastern Division of the railroad, eighty miles in length, is now under contract; and we wish to call the attention of our readers especially to the fact, that when this part of the work is ready for use, we shall have a continuous railroad communication from Pittsburgh to Cincinnati, through Cleveland and Columbus. By proper efforts, this may readily be accomplished next year, but it will require promptness on the part of the stockholders in paying up the instalments called for by the directors. The golden prize is now within our reach, and by a little effort we can secure the most valuable railroad connections, in advance of the projects of our rivals, both on the north and on the south of us.”

### The Iron Business.

One of the most interesting of the many documents accompanying the report of the treasury, is a letter from Charles E. Smith, Esq., of Philadelphia, on the prices and cost of manufacturing iron in England and in this country. It is well known how largely labor enters in the manufacture of iron, and Mr. Smith shows that, while in Great Britain the cost of labor in the manufacture of iron amounts to only \$3.71. The Pittsburgh American, in remarking upon this striking fact, says this American price of \$11, is what is paid at the east, but at Pittsburgh, even the present reduced prices at one fourth greater, say \$2.75, making the entire cost of labor there \$13.75, or ten dollars and four cents more per ton than is paid for labor by the English manufacturers. The Pittsburgh iron makers are paying, therefore, nearly four times as much for labor per ton as their English and Scotch competitors. The American says further the mills of that city average about 5,000 tons a year. The amount paid to labor in England for

the production of 5,000 tons is \$18,550, while in Pittsburgh is \$68,750. Taking the ten mills in Pittsburg (there are twelve in all), which average 5,000 tons each annually, there is paid for labor \$687,500, while the same number of mills of equal production in England would pay for the labor \$185,500, showing an excess in the case of these ten mills alone, of over five hundred thousand dollars more being paid for labor annually, than the production of the same amount of iron would cost in England.

### New York.

**Watertown and Rome Railroad.**—This road is to run from Rome to Cape Vincent, on the river St. Lawrence, opposite Kingston. It will effectually annex Canada to New York, commercially if not politically. Kingston is the centre of five hundred thousand inhabitants of Canada West—is the natural point of egress and ingress at all times, and in winter the only available one. To show what the trade of Canada West will be, it is only necessary to mention that the produce from that province which passed through Oswego during the last season, amounted to one hundred and ten thousand tons; and the exports through the same port to Canada, amounted in value to some \$2,500,000.—The above route will compete successfully with that of Oswego, in summer, and command the whole business in winter.

Business is rapidly increasing with Canada, under the drawback and warehousing laws, and as facilities are also increasing, her trade, already large, will soon be doubled. Aside from this, the road runs through one of the best portions of this State, with an enterprising and dense population of over 1200 to the mile. The road is quietly progressing and with great economy, and it is confidently believed the whole (97 miles) will be completed and put in operation for \$1,300,000. Five thousand tons of iron (T rail, 56 lbs. per yard) have been purchased at the lowest rate, somewhat below the estimate, and a portion of it is already delivered on the road. Engines and cars have also been contracted for, and it is expected the road will be put in operation from Rome to Piermont Manor, a distance of 53 miles, the present season. The reliable means of the road are already \$800,000, and increasing.—*Albany Journal.*

### New Jersey.

**Election of Officers.**—A meeting of the Delaware and Raritan canal company was held on the 10th inst., at their office at Princeton basin, when an election for officers was held with the following result: President, R. F. Stockton; Treasurer, James Neilson; Secretary, John R. Thompson; Directors, Robert F. Stockton, Garritt D. Wall, James Parker, James Neilson, James S. Green, James Potter, John R. Thompson, John C. Stevens.

### Missouri.

#### The Pacific Railway.

The city council of St. Louis is about to subscribe to this great enterprise, the \$500,000 authorized by a recent vote of the people. Private subscriptions have not yet reached that amount, but it is supposed that they soon will. When they do, the acting directors propose to go into the counties of Missouri that lie along the line, and in them they count upon getting very liberal subscriptions.

It is announced as the intention of the board to commence operations on the road in St. Louis, and proceed westwardly in its construction, as far and as fast as their means will permit. The Republican says that the first important point reached will



be the St. Louis coal field, about six miles out of the city, which will hardly fail to give a business to the road, that will make that much of it at least, pay. The next important point, perhaps, will be the Merrimac, where a valuable business in lumber, wood, farm produce, ores, metals, etc., will grow up. From this point westward to the Osage, the road will receive a large business from the products of farms, mines and forests.—*St. Louis Intelligencer*.

#### Maine.

##### Atlantic and St. Lawrence Railroad.

Two cargoes of iron have arrived in Portland for the use of this road, and the laying of the rails from Paris to Bethel will be commenced without delay. Both ends of this great work, in the States and in Canada, are progressing rapidly, and with the ample means at the command of the companies there can be no doubt of the completion of the road within the time agreed upon.

#### Massachusetts.

The annual report of the Stockbridge and Pittsfield railroad company has been published. This road, which is an extension of the Housatonic, northwardly, was completed in January, 1850, and has since been operated by the Housatonic railroad company, which has a lease of it at 7 per cent. on the cost, which is about \$450,000. Thus far it is understood that the business of the road has considerably exceeded the expectations of the Housatonic company, although many manufacturing establishments on the line of the road have not been in operation for some time past. The length of the whole road from Bridgeport to Pittsfield, including the Berkshire road to West Stockbridge, is about 120 miles. Of this distance the Stockbridge and Pittsfield and Berkshire roads make 44 miles. The whole cost of the line is about \$3,000,000. Of this cost the Housatonic and Berkshire make \$2,550,000. The net earnings of these roads in 1849 were \$153,900, or a little over 6 per cent.

#### Election of Railway Directors.

On the 8th inst., the stockholders of the Hillsborough and Cincinnati railroad company met in this place and re-elected their old directors. W. W. Sloan, Esq., was elected in the place of Mr. C. Jackson, deceased, and the board, as now constituted, is as follows:

W. O. Collins, J. Winston Price, W. H. Baldwin, S. J. Spees, N. W. Ayres, W. W. Sloan, John Barry.—*Hillsboro' Gaz.*

#### Virginia.

**Manassas Gap Railroad.**—A convention of the friends of the Manassas Gap railroad, from Alexandria to some point in the valley, was held at Front Royal a short time since. About sixty delegates were present. As evidence of the feeling on the subject in Shenandoah, it is stated that one gentleman, who was present at the convention, will give \$5,000. The citizens of Alexandria, by a vote of 501 to 7, have authorized a subscription of \$150,000 on the part of the corporation, to the stock of the railroad. The County Court of Rockingham have taken preliminary steps for submitting to the people the question of subscribing the same amount.

#### NEW YORK AND NEW HAVEN RAILROAD.

At the annual meeting of the New York and New Haven railroad company, last week, the following gentlemen were elected: Robert Schuyler, Morris Ketchum, Jonathan Sturgis, Anson G. Phelps, Elihu Townsend, of New York; Henry J. Sanford,

of Stamford, Conn.; William P. Burrall, of Bridgeport, Conn.; John E. Thayer, of Boston, Mass.; Wm. W. Boardman, of New Haven, Conn.

#### Kentucky.

At an election held in the Council Chamber, in the city of Maysville, for president and directors of the Maysville and Lexington railroad company, the following gentlemen were elected:

PRESIDENT, Richard Collins.

DIRECTORS—A. M. January, C. Schultz, F. T. Hord, W. S. Allen, H. Waller, and John Norton.—*Maysville Eagle*.

#### Pennsylvania.

The Pittsburgh American states that of the 122 furnaces recently in operation in the counties comprising the iron region of western Pennsylvania, but 59 are now in blast, producing 47,200 tons per annum. The whole number of furnaces make, when in operation, 97,600 tons. This shows a net loss in the industrial products of the country of 50,000 tons annually. That this cannot be attributed to there being no demand, is shown by the fact that in the years when the production is greatest, the prices were highest. In this view then the actual loss may be stated in money thus:

97,600 tons, at an average of \$30 per ton	\$2,928,000
47,200 tons, at its present average, \$22	
per ton	1,034,400

We have an amount of loss to these counties of.....\$1,893,600

The American tells us that of the 59 furnaces now in operation, about two thirds are making their last blast; and that in 1851 not over 20, if as many, will be in operation.

#### Steamer Atlantic.

This great steamer did not fulfil the expectations of the public in her passage to Liverpool. It occupied thirteen, instead of ten days, as expected. A part of the machinery gave out, which caused much delay.

#### Great Tunnel of the Alps.

To complete a direct line of railroad communication between Boulogne and Venice and Ancona, and consequently, between London and the Adriatic, one only obstacle lies in the way. The chain of Mont Cenis and Mont Genevre, running nearly northeast and southwest, would cross such a line, and present, with their elevation of 11,000 feet, an insurmountable bar to any direct and continuous railway. From London, as far as Chambery, by the Lyons railroad, all is smooth enough; nay, that rail can and will, and indeed, is now about to push further, ascending to Mont Meilland, and Maurienne (names well known to old post travellers, who directed their steps along the valley of the Arc, towards Lanslebourg), and, by an ulterior effort, it will yet reach higher, as far as Modane, at the foot of the northern crest of the Graian and Cottain Alps. But once there, all progress is arrested, and no train can hope to reach the Italian side to Susa and Turin, and thence to the eastern coasts of the peninsula, unless a subterranean wayfare be pierced through the snow capped barrier. What a magnificent problem is here presented to the inventive genius of the age! What splendid results to be attained by its successful solution! Such a problem has been actually under the consideration of the Sardinian government since August, 1845. Its solution is no longer a matter of doubt. The possibility of boring through the heart of Mont Genevre, and of linking Chambery with Susa, north and south of that range, is a demonstrated truth. The great tunnel of the Alps is about to become a reality, under the auspices of Victor Emanuel and the Piedmontese Parliament. The author of this gigantic scheme is the Chevalier Henry Maus, honorary inspector of the *Genie Civil*, the same who advised and executed the great works on the Liege

railroad. After five years of incessant study of the question, and many practical experiments and calculations, including the invention of new machinery for boring the mountain, this officer made his final report to the government on the 8th February, 1849. A commission was thereupon named on the 13th July, 1849, consisting of several distinguished civil engineers, artillery officers, senators, members of the government, and a professor of geology, to examine and give their opinion on the nature and feasibility of Chevalier Maus' project.—That commission on the 1st November last, being then under the presidency of the Minister of Public works, the Chevalier Paleocapa, decided unanimously and entirely in favor of the project. Their report, together with that of Chevalier Maus, has recently been printed for private distribution, by order of the Sardinian government, illustrated by maps and plans, and all the various calculations, not only of expense, but of the mechanical difficulties also which this great and striking project presents. An application for a part of the funds required to begin the great tunnel will be made to the Chambers forthwith, and the work, which it is expected will occupy five years, will cost 14,000,000*f*; while the entire railroad of the Alps, connecting the tunnel with the Chambery railway on the one side (in length together 36,565 metres, or 204 English miles), will cost 21,000,000*f*. more, forming a total expense of 35,000,000*f*. The great tunnel itself will measure 12,209 metres, or nearly seven English miles in length; its greatest height will 19 feet, and its width 25, admitting of course, of a double line of rail. Its northern entrance is to be at Modane, and the southern entrance at Bardonnèche, on the river Mardovine. This latter entrance, being the highest point of the intended line of rail, will be 4,092 feet above the level of the sea, and yet 2,400 feet below the highest or culminating point of the great road or pass, over the Mont Cenis. It is intended to divide the connecting lines of rail leading to either entrance of the tunnel into eight inclined planes of 5,000 metres, or 24 English miles each, worked like those at Liege, by endless cables and stationary engines, but in the present case moved by water power derived from the torrents. The most remarkable part of the project, however, is the newly devised machinery and motive power by which the Chevalier Maus proposes to bore the great tunnel. It is as ingenious as it is new, presenting some extraordinary facts in mechanics which could hardly have been anticipated, but the truth of which has been tested and verified by practical essays made with working models of the natural size, before the government commission already mentioned. But these, and the consideration of the immense results, social, commercial, and political, that may be expected to flow from such a gigantic undertaking, in comparison with which the Thames tunnel and the Britannia bridge becomes secondary objects, may form the subject of another article.—*Irish Railway Gaz.*

**An Essay on Pen and Pocket Cutlery,**  
*Embracing a Detailed Description of the Mechanical, Chemical, and Manual Operations Performed on Certain Raw Materials, to Convert them into the Means, Implements, and Materials, for Manufacturing Pen and Pocket Knives.*

BY A. L. HOLLEY.

CHAPTER I.—A GENERAL VIEW OF CUTLERY, AND OF THE MODE OF MANUFACTURING PEN AND POCKET KNIVES.

Cutlery has been in use from the earliest ages of the world, and in its different forms, it is, and ever has been among the chief implements in war, manufactures, agriculture and architecture. It is indispensable everywhere, and in almost every kind of business, and pocket knives may be found in the possession of almost every man, woman and child in christendom. Cutlery was probably among the earliest articles ever manufactured, and was first made in England in the year 1563. Here, the first specimens were of the coarser and larger kind, unwieldy and imperfect, though made expensively and with much labor. These, and the means and processes of making them, have met with great

changes and improvements, and long experience in the business has produced many other varieties, which convenience and necessity have demanded, so that, at the present time, we have cutlery instruments in every desirable shape and form, each perfectly adapted to its particular work. The chief point, and requisite in any piece of cutlery, is a *good blade*, one that will cut fast and easily, that has and will retain a fine edge. The excellence or imperfection of the other parts, however, are not usually in proportion to the quality of the blade, as some endeavor to make knives that will cut, whether finished expensively, or roughly, and others enclose cast iron blades, in a profusion of polished silver and pearl. In regard to the other parts of pocket knives, there are as many different tastes as there are varieties. Within the last century at least, the manufacture of cutlery has been confined almost exclusively to London and Sheffield in England, the former city having produced chiefly fine, and the latter larger and coarser kinds, though at present the best pocket knives originate there, and owing to its local advantages and division of labor, all varieties are made there cheaper, and in greater quantities than in London. The cutlery of England has long been held in justly high estimation, and considered superior to any in the world but the fact that the English have made, and exported, great quantities of mere trash, and passed off iron blades for steel, together with the enterprise, thoroughness and honesty of cutlers on the western continent, has given great celebrity to American cutlery, and its reputation is constantly improving. Blades are generally bought for, expected to be, and usually are, *steel*, but several Sheffield cutlers have tarnished their fame, and their blades, and imposed upon the community, by obtaining a patent for, and producing large quantities of blades, cast directly from a certain kind of iron. If those were distinctly marked, and sold for *cast iron*, no fault could be found, as the purchaser would then know what he was buying; but they are warranted to be, and placed in market for, the *best steel*, and are not only introduced among coarse, but fine knives, holding a good edge for a short time, and being susceptible of so high a polish, that the most experienced judges can with difficulty detect the cheat at sight. This iron is, from the superabundance of its carbon, highly susceptible of liquidity, and readily cast into the required form. In this state the blades are very hard and brittle as glass, but are softened by decomposition, being subjected to a strong and long continued fire, in close vessels, and in contact with iron ore, or any substance containing oxygen, with which this extra carbon combines. This indeed saves all the trouble and expense of forging blades and purchasing steel, but on the other hand it is a system of robbery, carried on to the imminent detriment of the science of "Whittology," in all its numerous branches. As aforesaid, the manufacture of cutlery has been confined almost wholly to Great Britain, but recently English operatives have immigrated to this country, and of these Americans have learned the fundamental principles of the trades, and leaving the beaten track of exclusive manual labor, are introducing their various improvements, and substituting machinery to perform quicker and more perfectly many of those operations formerly accomplished wholly by hand. Although many and important improvements are yet to be made, the work, as we shall show, is not capable of being wholly executed by machines. The manufacture of pocket knives in London has been divided into two separate

trades, the blade maker's and the handle maker's. In Sheffield it now is, and at first was in the United States, carried on in four separate trades, viz: the blade, and the spring forger's, the grinders, and the cutlers. In addition to forging the blades, it is the business of the blade forger to mark, harden and temper them. They are ground, glazed and polished by the grinder, and the cutler makes the handle and finishes the knife. To carry on the business, at least 42 different kinds of materials must be constantly on hand, and from 75 to 80 different tools used. A well-made, shell handle, four blade knife, passes through 387 different operations, before it is ready for market, exclusive of those performed on materials before they are prepared for knife making, which, if taken into account, would at least double the number. The forger's business is easily accomplished, being much lighter than common blacksmithing, pleasant and lucrative.—The grinder's is not hard, though unhealthy in some cases, but better in a pecuniary point of view than either of the others. The cutler's is pleasanter than either trade, and not unhealthy. The manipulations are easy, and must be skillfully performed. The spring forger's labor is now entirely dispensed with in America, machinery having been put into operation which executes his work much more rapidly and perfectly. American cutlers are now adopting a plan which bids fair greatly to facilitate the manufacture of knives, viz: to subdivide the cutler's trade. For instance, instead of obliging each man of twelve cutlers to make *wholly* a dozen knives, to have each man become master of one particular *branch* of the cutler's trade, and perform certain operations on every knife of the twelve dozen. Thus the operatives each doing a certain part, can expedite and perfect the performance of the various operations. By such a division of labor, the business is divided into many different trades, each dependent on the others. The use of machinery will of course be favorable to this place, and to all who wish to purchase cheap knives, as a boy, for a quarter of a dollar per day, can with a machine accomplish the work of half a dozen men at two dollars each. We have reason to believe, that after this business has been a few years longer in the hands of skilful and scientific Americans, the aforesaid improvements will be enlarged, and perfected, and new and easily wrought substances and compositions will be introduced, which shall make good the places of materials now expensive, and imperfectly answering the purpose. The consequences of this will be excellent cutlery, perfectly adapted to its work, at a very low price.

To be continued.

### Spikes, Spikes, Spikes.

ANY person wishing a simple and effective Spike Machine, or a number of them, may be supplied by addressing  
J. W. FLACK,  
Troy, N. Y.  
March 6, 1850.

### 8,000 Tons Railroad Iron.

THE OHIO AND PENNSYLVANIA RAILROAD CO. wish to contract for eight thousand tons of Railroad Iron, for the eastern division of their road, extending westward from Pittsburgh. Three thousand tons to be delivered on the Ohio river at Pittsburgh and Beaver, before the close of canal navigation in the present year, 1850; and the remainder in the spring of next year. The rails are to be of the H pattern, in lengths of 20 feet, and are to weigh 60 lbs. per lineal yard. They are to be subject to the inspection of Solomon W. Roberts, Chief Engineer.—For further particulars address the President of the Company at Pittsburgh.  
By order of the Board of Directors,  
WM. ROBINSON, Jr., President.

### S. S. Keyser & Co., IRON WAREHOUSE,

Corner of South and Pratt Streets,  
BALTIMORE, MD.

Selling Agents for the Rough and Ready Bar Iron and Elk Boiler and Flue Iron Rolling Mills, Sarah and Taylor Furnaces, and Wrightsville Hollow Ware Foundry, and Dealers in Bar and Sheet Iron, and Cast, Sheer, German, Blister, Spring and Electrodes Steel, etc., etc.

A young man of experience in Surveying wishes a situation on a Railroad as an Assistant. Please apply at this office.

### Patent India Rubber Steam Packing.

THIS article, made by the subscriber, who alone is authorized to make it, is warranted to stand as high a degree of heat as any that has been or can be made by any person—and is the article which has made the reputation of India Rubber Steam Packing and the demand therefor. A large assortment of all thick nesses requisite for any description of engines, steam pipes, valves, etc., constantly on hand and for sale by the manufacturer and patentee, who will give every information regarding its properties, mode of use, etc. at the warehouse.  
JOHN GREACHEN, JR.,  
98 Broadway, opposite Trinity Church.  
New York, October, 1849.

### Notice to Contractors.

PROPOSALS will be received at the Office of the Morris Canal and Banking Co., Jersey City, till the 1st day of June next, for the Grading Masonry and Timber work for ten inclined planes on the western division of said canal, to be constructed on the same plan as Plane 6, west. Plans and specifications will be ready at the said Office and at the Office of the Assistant Engineer at Mansfield, Warr'n Co., on and after the 25th inst. Contracts to be entered into, and the work commenced immediately after the letting.  
On the 30th instant the water will be drawn out of the canal at the head and foot of Plane 6 west, from 10 o'clock A.M. till 3 P.M., to give contractors an opportunity to examine the work to be constructed in the bottom of the canal.

The most satisfactory testimonials of character and responsibility must accompany the bids, and bidders are requested to state what other work, if any, they are engaged in, and the time when such work will be finished.  
W. H. TALCOTT, Supt. and Eng.  
Jersey City, May 14, 1850.

### Hudson River Railroad.

#### NOTICE FOR PROPOSALS.

SEALED Proposals will be received by the Directors of the Hudson River Railroad Company, at their Office, 54 Wall st., New York, until Monday noon, the 27th day of May inst., for the grading, masonry, bridging and pile bridging, to be done on the 5th Division, embracing sections No. 54 to 71 inclusive, extending from Poughkeepsie 18 miles, to Garretson's Point, two miles above Rhinebeck.

This line may be examined with plans and specifications of the work, at the office of H. A. GARDNER, Resident Engineer, in Poughkeepsie, from the present time.

Also, there will be let at the same time, Division No. 8, embracing Sections No. 86 to 100 inclusive, extending 18 miles from Stuyvesant to the Northern termination of the road at East Albany. This line and plans of work may be examined by reference to EDMUND FRENCH, Resident Engineer of this Division, at his office in Albany, after Sunday, the 19th day of this month. Proposals may be made by Sections or by Divisions. The work on the 8th Division to be finished on or before the 1st day of February next, and that on the 5th Division on or before the 1st day of July, 1851. The remaining and intermediate Divisions and Sections will be ready to be let after a short period, when due notice will be given. The Directors reserve to themselves the right to accept or reject proposals that may be offered, as they may consider the interest of the company to require.

The party to any proposition which may be accepted, will be required to enter into contract immediately after acceptance of the same.

The names, in full, of all parties proposing to be interested in contracts, must be given in the propositions and no assignment or transfer of the bid, or contract, will be permitted.

A reserve of 20 per cent. on the monthly estimate will be retained by the company, until the contract is completed, as security for performance.

WM. C. YOUNG, Chief Engineer.  
Office Hudson River Railroad Co.,  
54 Wall st., May 14, 1850.





**American Railway Guide,  
AND POCKET COMPANION FOR THE  
UNITED STATES;**

CONTAINING Correct Tables, showing the time for starting of trains from all stations, distances, fares, etc., on all the Railway lines in the U. States; also many of the principal Steamboat and Stage routes—accompanied by a complete RAILWAY MAP. Price, single copies 10 cts., or \$1 per annum. Published on the first of every month, corrected from returns furnished by the Railway Superintendents throughout the Union.

This book has been compiled somewhat on the plan of Bradshaw's Guide, with such improvements in size, form and arrangement as have seemed desirable; and the publisher confidently hopes it will not be found liable to the objections of incompleteness and incorrectness, which have been made, and justly too, against various other similar works heretofore issued.

The subscriber having had the management of the NEW YORK PATHFINDER almost from its commencement, has enjoyed superior facilities in obtaining information relating to the thoroughfares of travel, and is therefore well qualified to prosecute with success the arduous undertaking of furnishing a complete and correct national guide book.

STRINGER & TOWNSEND, General Agents, 222 Broadway: and sold also by Booksellers and Periodical Dealers generally throughout the country; also on all the Railways and Steamboats.

CURRAN DINSMORE, Publisher.  
N. Y. Pathfinder Office,  
123 Fulton St., New York City.

**ENGINEERS.**

**Atkinson, T. C.,**  
Alexandria and Orange Railroad, Alexandria, Va.

**Baneks, C. W.,**  
Civil Engineer, Vicksburg, Miss.

**Berrien, John M.,**  
Michigan Central Railroad, Marshall, Mich.

**Buckland, George,**  
Troy and Greenbush Railroad.

**Clement, Wm. H.,**  
Little Miami Railroad, Cincinnati, Ohio.

**Cozzens, W. H.,**  
Engineer and Surveyor, St. Louis, Mo.

**Alfred W. Craven,**  
Chief Engineer Croton Aqueduct, New York.

**Davidson, M. O.,**  
Eckhart Mines, Alleghany Co., Maryland.

**Fisk, Charles B.,**  
Cumberland and Ohio Canal, Washington, D. C.

**Felton, S. M.,**  
Fitchburg Railroad, Boston, Mass.

**Floyd-Jones, Charles,**  
South Oyster Bay, L. I.

**Gzowski, Mr.,**  
St. Lawrence & Atlantic Railroad, Montreal, Canada.

**Gilbert, Wm. B.,**  
Rutland and Burlington Railroad, Rutland, Vt.

**Grant, James H.,**  
Nashville and Chattanooga R. R., Nashville, Tenn.

**Harry, P.,**  
Binghamton, New York.

**S. W. Hill,**  
Mining Engineer and Surveyor, Eagle River,  
Lake Superior.

**Holcomb, F. P.**  
Southwestern Railroad, Macon, Ga.

**Johnson, Edwin F.**  
New York and Boston Railroad, Middletown Ct.

**Latrobe, B. H.,**  
Baltimore and Ohio Railroad, Baltimore, Md.

**Miller, J. F.,**  
Worcester and Nashua Railroad, Worcester, Mass.

**Morris, Elwood,**  
Schuylkill Navigation, Schuylkill Haven, Pa.

**Morton, A. C.,**  
Atlantic and St. Lawrence Railroad, Portland, Me.

**McRae, John,**  
South Carolina Railroad, Charleston, S. C.

**Nott, Samuel,**  
Lawrence and Manchester Railroad, Boston,

**Prichard, M. B.,**  
East Tennessee and Georgia R. R., Cleveland, Tenn.

**Roebling, John A.,**  
Trenton, N. J.

**W. Milnor Roberts,**  
Bellefontaine and Indiana Railroad, Marion, Ohio.

**Roberts, Solomon W.,**  
Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

**Sanford, C. O.,**  
South Side Railroad, Virginia.

**Schlatter, Charles L.,**  
Northern Railroad (Ogdensburg), Malone, N. Y.

**Sours, Peter,**  
Rahway, New Jersey.

**Stark, George.,**  
Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

**Steele, J. Dutton,**  
Pottstown, Pa.

**Trimble, Isaac K.,**  
Philad., Wil. & Baltimore Railroad, Wilmington, Del.

**Tinkham, A. W.,**  
United States Fort, Bucksport, Me.

**Thomson, J. Edgar.,**  
Pennsylvania (Central) Railroad, Philadelphia.

**Troost, Lewis,**  
Alabama and Tennessee Railroad, Selma, Ala.

**Whipple, S.,**  
Civil Engineer and Bridge Builder, Utica, N. Y.

**Williams, E. P.,**  
Auburn and Schenectady Railroad, Auburn, N. Y.

**Williams, Charles H.,**  
Milwaukee, Wisconsin.

**HOTELS.**

**JONES' HOTEL,**  
NO. 152 CHESTNUT STREET,  
PHILADELPHIA.

BRIDGES & WEST, . . . . . Proprietors.

**DUNLAP'S HOTEL,**  
On the European Plan,  
NO. 135 FULTON STREET,  
Between Broadway and Nassau St.,  
NEW YORK.

**BUSINESS CARDS.**

**J. T. Hodge**  
Will attend to the examination of mining tracts near  
Lake Superior, and prepare Reports and Maps.  
Address, during the Summer,  
Ontonagon Postoffice, Lake Superior.

**Cumberland Steam Coal,**

FROM THE  
**FROSTBURG MINES, MD.**  
H. A. TUCKER,  
Agent of Frostburg Coal Co.  
No. 50 Wall Street, New York.

**Eaton, Gilbert & Co.,**  
Railroad Car, Coach and Omnibus Builders,  
TROY, N. Y.

**Nathan Caswell,**  
METAL BROKER, 69 WALL ST., N. Y.

For the Purchase and Sale of Railroad Iron (new and old.) Boiler Plates, Pig and Bar Iron, Lead, Tin, Copper, Spelter, etc. Refers to

Messrs. Boorman, Johnston, & Co., New York.  
" Grinnell, Minturn & Co., "  
" Barston, Pope & Co., "  
" Earps & Brink, Philadelphia.  
" E. Pratt & Brother, Baltimore.  
John Barstow, Esq., Providence.  
Lewis Bullard, Esq., Boston.  
February 9, 1850. 6m\*

**United States Railroad Guide  
and Steamboat Journal.**

CONTAINING OFFICIAL TIME ADVERTISEMENTS,  
Tables of Stations, Distances, Fares, Time, etc.,  
with much miscellaneous matter for the travelling public. Price 12 cents a copy. Yearly subscription \$1.  
Published at 43 Ann street, New York.

**J. & Riley Carr,**  
Manufacturers of Cast, Shear, German and Blister  
**STEEL,**  
Of all Descriptions, Warranted Good.  
BAILEY-LANE WORKS, SHEFFIELD.

R. S. STENTON, Agent,  
NO. 20 CLIFF ST., NEW YORK.

**STEEL AND FILES.**

**R. S. Stenton,**  
20 CLIFF STREET, NEW YORK,  
AGENT FOR

**J. & Riley Carr's**  
BAILEY-LANE WORKS, SHEFFIELD,  
Manufacturers of Cast, Shear, German and Blister  
**STEEL**  
Of all descriptions. Warranted Good  
**FILES.**

Manufacturers of Machinists' Warranted Best Cast  
Steel Files, expressly for working upon Iron and Steel,  
made very heavy for recutting.  
A full Stock of Steel and Files at all times on  
hand. 6m4

**Walter R. Johnson,**  
CIVIL AND MINING ENGINEER AND AT-  
torney for Patents. Office and Laboratory, F St.,  
opposite the Patent office, Washington, D. C.

**Dudley B. Fuller & Co.,**  
IRON COMMISSION MERCHANTS,  
No. 139 GREENWICH STREET,  
NEW YORK.

**Manning & Lee,**  
GENERAL COMMISSION MERCHANTS,  
NO. 51 EXCHANGE PLACE,  
BALTIMORE.

Agents for Avalon Railroad Iron and Nail Works.  
Maryland Mining Company's Cumberland Coal 'CED'  
—'Potomac' and other good brands of Pig Iron.

**Cop Waste.**

CLEAN COP WASTE, suitable for cleaning Rail-  
road, Steam boat and Stationary Engines, con-  
stantly on hand and for sale by

KENNEDY & GELSTON,  
5½ Pine St., New York.  
October 27, 1849, 3m

**Ranstead, Dearborn & Co.,**

MANUFACTURERS OF  
LOCOMOTIVE CRANKS AND CAR AXLES,  
ALSO  
WROUGHT IRON SHAFTING,  
And All Kinds of Hammered Shapes.  
Forge at Commercial Point, Dorchester,  
Office 25 Foster's Wharf, opposite No. 211 Broad St.  
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**Henry J. Ibbotson,**  
IMPORTER of Sheffield and Birmingham Goods.  
Also, Agent for the Manufacture of Telegraph  
Wire. 218 PEARL ST., NEW YORK.

**Cumberland, (Md.,) Coals for  
Steaming, etc.**  
ORDERS RECEIVED FOR AND FILLED  
by J. COWLES, 37 Wall St., N. Y.



**Railroad Car Manufacturer's  
Furnishing Store.****F. S. & S. A. MARTINE,**

IMPORTERS AND MANUFACTURERS OF

**RAIL ROAD CAR &  
CARRIAGE LININGS,**PLUSHES, CURTAIN MATERIALS, ETC.,  
112 WILLIAM ST., NEAR JOHN.3-4 and 6-4 Damasks, Union and Worsted; Mo-  
reens, Rattinets, Cloths, Silk and Cotton Velvets,  
English Bunting**To Engineers and Surveyors.**E. BROWN AND SON Mathematical inst. mak-  
ers No. 27 Fulton Slip, New York, make and keep  
for sale, Theodolites, Levelling inst., Levelling rods,  
Surveyors Compasses, and Chains, Cases of Mathe-  
matical drawing insts. various qualities, together with  
a general assortment of Ivory Scales and small insts.  
generally used by Engineers.**Samuel Kimber & Co.,  
COMMISSION MERCHANTS**

WILLOW ST. WHARVES, PHILADELPHIA.

AGENTS for the sale of Charcoal and Anthracite  
A Pig Iron, Hammered Railroad Car and Locomo-  
tive Axles, Force Pumps of the most approved con-  
struction for Railroad Water Stations and Hydraulic  
Rams, etc., etc.

July, 27, 1849.

**James Herron, Civil Engineer,**

OF THE UNITED STATES NAVY YARD,

PENSACOLA, FLORIDA.,

PATENTEE OF THE

**HERRON RAILWAY TRACK.**Models of this Track, on the most improved plans,  
may be seen at the Engineer's office of the New York  
and Erie Railroad.**To Railroad Companies.****—WROUGHT IRON WHEELS—**

SAFETY AND ECONOMY.

**NORRIS' LOCOMOTIVE WORKS,**

SCHENECTADY, NEW YORK,

Are Manufacturing Wrought Iron Driving, Truck,  
Tender, and Car Wheels—made from the best Ameri-  
can Iron. Address E. S. NORRIS.

May 16, 1849.

**Machinery Warehouse.**S. C. HILLS, No. 43 Fulton street, New York, has  
constantly for sale Steam Engines, Boilers, Lathes,  
Chucks, Drills, Planers, Force and Suction Pumps;  
Tenoning, Morticing and Boring Machines, Shingle  
Machines, Bolt and Nut Machines, Belting, Oil, Iron  
and Lead Pipe; Rubber, Percha and Leather Hose,  
&c., &c.S. C. H.'s arrangements with several machine shops  
are such that he can supply, at very short notice, large  
quantities of machinery.

November 23, 1849.

**George O. Robertson,  
BROKER IN SCOTCH AND  
AMERICAN PIG IRON;**

Bar Iron, Lead, Spelter, Tin, Copper, etc.,

No. 4 Liberty Place, MAIDEN LANE,

(Near Broadway.)

NEW YORK

**Manufacture of Patent Wire  
ROPE AND CABLES,**For Inclined Planes, Suspension Bridges, Standing  
Rigging, Mines, Cranes, Derrick, Tilters, &c., by

JOHN A. ROEBLING, Civil Engineer,

TRENTON, N. J.

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MERCHANT, AND MANUFACTURER OF  
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—AND FILES—

IMPORTER OF THE

GENUINE WICKESLY GRINDSTONES

NO. 8 LIBERTY STREET,

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**Doremus & Harris,  
ANALYTICAL & CONSULTING CHEMISTS,**

179 BROADWAY, NEW YORK.

SCHOOL OF CHEMISTRY.

**IRON.****Railroad Iron.****3,000** TONS C. L. MAKE 63½ lbs. per yard,  
now landing and to arrive.Also contracts made for future delivery of above su-  
perior make English Iron.

300 Tons Banks Best Iron, Round, Square and Flat.

200 " English Bar " " " "

10 " 9-16 Square Iron for Railroad Spikes.

For sale in lots to suit purchasers by

DAVID W. WETMORE.

New York, March 26, 1850. 3m

**SPRING STEEL FOR LOCOMOTIVES, TEN-  
DERS AND CARS.**—The subscriber is engaged  
in manufacturing spring steel from 1½ to 6 inches in  
width, and of any thickness required: large quantities  
are yearly furnished for railroad purposes, and wher-  
ever used its quality has been approved of. The estab-  
lishment being large, can execute orders with great  
promptitude, at reasonable prices, and the quality war-  
ranted. Address  
J. F. WINSLOW, Agent,  
Albany Iron and Nail Works.**Railroad Iron.**THE Undersigned, Agents for Manufacturers, are  
prepared to contract to deliver Rails of superior  
quality, and of any size or pattern, to any ports of dis-  
charge in the United States.

COLLINS, VOSE &amp; CO.

158 South St.

New York, November 17, 1849.

**Railroad Iron.**

1,500 Tons weighing 53 lbs. per lineal yard.

500 " " 57 " " "

500 " " 56 " " "

500 " " 60 &amp; 61 lbs. " "

Also 2½x½ flat rails. All the above being of approv-  
ed patterns. For sale by

DAVIS, BROOKS, &amp; CO.,

68 Broad street.

N.B.—Rails imported on commission, or at a fixed  
price.**Iron.**Pig Iron, Anthracite and Charcoal; Boiler and Flue  
Iron, Spring and Blistered Steel, Nail Rods, Best Re-  
fined Bar Iron, Railroad Iron, Car Axles, Nails, Stove  
Castings, Cast Iron Pipes of all sizes, Railway Chairs  
of approved patterns' for sale by

COLEMAN, KELTON &amp; CABELL,

109 N. Water St., Philadelphia.

**IRONDALE PIG METAL, MANUFACTURED**  
and for sale by the Bloomsburg Railroad Iron Co.  
DUDLEY FISHER, Treasurer.

75 N. Water St., Philadelphia.

**Railroad Iron.****500** Tons, afloat, weighing 57 pounds per lineal  
yard, for sale by

COLLINS, VOSE &amp; CO.,

158 South St.

New York, November 17, 1849. 1m46

**Railroad Iron.****1675** Tons, weighing about 61 lbs. per yard, 90  
tons, weighing about 52 lbs. per yard, and  
825 tons, weighing about 53½ lbs. per yard, of the lat-  
est and most approved patterns of T rail, for sale by

BOORMAN, JOHNSTON &amp; CO.,

119 Greenwich street.

New York, Feb. 25, 1850.

N.B.—B. J. & Co are also prepared to take con-  
tracts for English rails, delivered in any of the Atlan-  
tic ports of the United States.**Railroad Iron.**THE UNDERSIGNED, HAVING made arrange-  
ments abroad, are prepared to contract for the deliv-  
ery of Foreign rails, of approved brands upon the  
most favorable terms.They will also make contracts for American rails,  
made at their Trenton works, from Andover Iron, in  
whole or in part, as may be agreed upon.They are prepared to furnish Telegraph, Spring and  
Market Wire; Braziers and Wire Rods; Rivets and  
Merchant Bars to order, all made exclusively from An-  
dover Iron. The attention of parties who require Iron  
of the very best quality for special purposes, is respect-  
fully invited.

COOPER &amp; HEWITT,

17 Burling Slip, New York.

February 15, 1850.

**Glendon Refined Iron.**

Round Iron, Band Iron, Hoop Iron,

Square " Flat " Scroll "

Axles, Locomotive Tyres,

Manufactured at the Glendon Mills, East Boston, for  
sale by

GEORGE GARDNER &amp; CO.,

5 Liberty Square, Boston, Mass.

Sept. 15, 1849. 3m37

**PATENT HAMMERED RAILROAD, SHIP &  
BOAT SPIKES.**—The Albany Iron Works  
have always on hand, of their own manufacture, a  
large assortment of Railroad, Ship and Boat Spikes  
from 2 to 12 inches in length, and of any form of head  
From the excellence of the material always used in  
their manufacture, and their very general use for rail-  
roads and other purposes in this country, the manu-  
facturers have no hesitation in warranting them fully  
equal to the best spikes in market, both as to quality  
and appearance. All orders addressed to the subscrib-  
ers at the works will be promptly executed.

JOHN F. WINSLOW, Agent.

Albany Iron and Nail Works, Troy, N. Y.

The above Spikes may be had at fact prices, of  
Erastus Corning & Co Albany; Merritt & Co., New  
York; E. Pratt & Brother, Es. Anners, Md**LAP—WELDED  
WROUGHT IRON TUBES**

FOR

**TUBULAR BOILERS,**FROM ONE AND A QUARTER TO SEVEN  
INCHES IN DIAMETER.THE ONLY Tubes of the same quality and man-  
ufacture as those so extensively used in England,  
Scotland, France and Germany, for Locomotive, Ma-  
rine and other Steam Engine Boilers.THOMAS PROSSER & SON, Patentees,  
28 Platt street, New York.**Railroad Iron.**THE UNDERSIGNED ARE PREPARED TO  
contract for the delivery of English Railroad Iron  
of favorite brands, during the Spring. They also re-  
ceive orders for the importation of Pig, Bar, Sheet, etc.  
Iron.

THOMAS B. SANDS &amp; CO.,

22 South William street,

February 3, 1849.

New York.

**Iron Store.**THE Subscribers, having the selling agency of the  
following named Rolling Mills, viz: Norristown,  
Rough and Ready, Kensington, Philadelphia, Potts-  
grove and Thorndale, can supply Railroad Companies,  
Merchants and others, at the wholesale mill prices for  
bars of all sizes, sheets cut to order as large as 58 in.  
diameter; Railroad Iron, domestic and foreign; Loco-  
motive tire welded to given size; Chairs and Spikes;  
Iron for shafting, locomotive and general machine-  
purposes; Cast, Shear, Blister and Spring Steel; Bol-  
ter rivets; Copper; Pig iron, etc., etc.

MORRIS, JONES &amp; CO.,

Iron Merchants,

Schuylkill 7th and Market Sts., Philadelphia.

August 16, 1849.

1y33

**Railroad Iron.**THE MOUNT SAVAGE IRON WORKS, AL-  
legany county, Maryland, having recently pas-  
sed into the hands of new proprietors, are now prepa-  
red, with increased facilities, to execute orders for any  
of the various patterns of Railroad Iron. Commu-  
nications addressed to either of the subscribers will have  
prompt attention. J. F. WINSLOW, President

Troy, N. Y.

ERASTUS CORNING, Albany

WARREN DELANO, Jr., N. Y.

JOHN M. FORBES, Boston.

ENOCH PRATT, Baltimore, Md.

November 6, 1848.

**Railroad Iron.**THE SUBSCRIBERS ARE PREPARED TO  
take orders for Railroad Iron to be made at their  
Phoenix Iron Works, situated on the Schuylkill Riv-  
er, near this city, and at their Safe Harbor Iron Works,  
situated in Lancaster County, on the Susquehanna  
river; which two establishments are now turning out  
upwards of 1800 tons of finished rails per month.Companies desirous of contracting will be promptly  
supplied with rails of any required pattern, and of the  
very best quality.

REEVES, BUCK &amp; CO.,

45 North Water St., Philadelphia,

March 15, 1849.

**Monument Foundry.**

**A. & W. DENMEAD & SON,**  
Corner of North and Monument Sts.,—Baltimore,

HAVING THEIR

**IRON FOUNDRY AND MACHINE SHOP**

In complete operation, are prepared to execute faithfully and promptly, orders for Locomotive or Stationary Steam Engines, Woolen, Cotton, Flour, Rice, Sugar Grist, or Saw Mills,

Slide, Hand or Chuck Lathes, Machinery for cutting all kinds of Gearing, Hydraulic, Tobacco and other Presses, Car and Locomotive patent Ring Wheels, warranted,

Bridge and Mill Castings of every description, Gas and Water Pipes of all sizes, warranted, Railroad Wheels with best faggoted axle, furnished and fitted up for use, complete

Being provided with Heavy Lathes for Boring and Turning Screws, Cylinders, etc., we can furnish them of any pitch, length or pattern.

Old Machinery Renewed or Repaired—and Estimates for Work in any part of the United States furnished at short notice.

June 8, 1849.

**Iron Wire.**

**REFINED IRON WIRE OF ALL KINDS,** Card, Reed, Cotton-flyer, Annealed, Broom, Buckle, and Spring Wire. Also all kinds of Round, Flat or Oval Wire, best adapted to various machine purposes, annealed and tempered, straightened and cut any length, manufactured and sold by

**ICHABOD WASHBURN.**

Worcester, Mass., May 25, 1849.

**American and Foreign Iron.**

FOR SALE,

300 Tons A 1, Iron Dale Foundry Iron.

100 " 1, " " "

100 " 2, " " "

100 " " Forge " "

400 " Wilkesbarre " "

100 " "Roaring Run" Foundry Iron.

300 " Fort " "

50 " Catocin " "

250 " Chikiswalungo " "

56 " "Columbia" "chilling" iron, a very superior article for car wheels.

75 " "Columbia" refined boiler blooms.

30 " 1 x 1/2 Slit iron.

50 " Best Penna. boiler iron.

50 " "Puddled" " "

50 " Bagnall & Sons refined bar iron.

50 " Common bar iron.

Locomotive and other boiler iron furnished to order.

**GOODHUE & CO.,**

New York.

64 South street

**American Pig, Bloom and Boiler Iron.**

**HENRY THOMPSON & SON,**  
No 57 South Gay St., Baltimore, Md.,

Offer for sale, Hot Blast Charcoal Pig Iron made at the Catocin (Maryland), and Taylor (Virginia), Furnaces; Cold Blast Charcoal Pig Iron from the Cloverdale and Catawba, Va., Furnaces, suitable for Wheels or Machinery requiring extra strength; also Boiler and Plug Iron from the mills of Edge & Hillis in Delaware, and best quality Boiler Blooms made from Cold Blast Pig Iron at the Shenandoah Works, Va. The productions of the above establishments can always be had at the lowest market price for approved paper.

American Pig Iron of other brands, and Rolled and Hammered Bar Iron furnished at lowest prices. Agents for Watson's Perth Amboy Fire Bricks, and Rich & Cos. New York Salamander Iron Chests.

Baltimore, June 14, 1849.

6 mos

**Wheel, Forge and Foundry Iron.**

**LOCUST GROVE** Wheel Iron of great strength and superior chilling property.

Balt. Charcoal Forge Iron, from Patuxent, Curtis Creek and Gunpowder furnaces.

Elkridge Foundry Iron, of superior strength and softness. Anthracite and Charcoal Iron from Pennsylvania and Virginia. Gas and Water Pipes, Lamp Posts from Elkridge furnace.

**LEMMON & GLENN,**

6m9

62 Buchanan's Wharf, Baltimore.

**Iron.**

THE SUBSCRIBERS having resumed the agency of the New-Jersey Iron Company, are prepared to execute orders for the different kinds and sizes of Iron usually made at the works of the company, and offer for sale on advantageous terms.—

150 tons No. 1 Boonton Foundry Pig Iron.

100 " No. 2 do. do. do.

300 " Nos. 2 & 3 Forge do. do.

100 " No. 2 Glendon do. do.

140 " Nos. 2 & 3 Lehigh Crane do. do.

100 " No. 1 Pompton Charcoal do. do.

100 " New-Jersey Blooms

50 " New-Jersey Faggoting Iron, for shafts

Best Bars, 1/2 to 4 inch by 1/2 to 1 inch thick.

Do do Rounds and Squares, 1/2 to 3 inch.

Rounds and Squares, 3-16 to 1 inch.

Half Rounds, 1/2 to 1 in. Ovals & Half Ovals 1/2 to 1 1/2 in.

Bands, 1 1/2 to 4 inch. Hoops, 1/2 to 2 inch.

Trunk Hoops, 1/2 to 1 1/2 in. Horse Shoe & Nut Iron.

Nail Plates, Railroad Spikes.

**DUDLEY B. FULLER & Co.,** 139 Greenwhich-st. and 55 Broad-st.

**WILLIAM JESSOP & SONS' CELEBRATED CAST-STEEL.**

The subscribers have on hand, and are constantly receiving from their manufactory,

**PARK WORKS, SHEFFIELD,**

Double Refined Cast Steel—square, flat and octagon.

Best warranted Cast Steel—square, flat and octagon.

Best double and single Shear Steel—warranted.

Machinery Steel—round.

Best and 2d gy. Sheet Steel—for saws and other purposes.

German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps.

Genuine "Sykes" L Blister Steel.

Best English Blister Steel, etc., etc., etc.

All of which are offered for sale on the most favorable terms by **WM. JESSOP & SONS,**

91 John street, New York.

Also by their Agents—

Curtis & Hand, 47 Commerce street, Philadelphia.

Alex'r Fullerton & Co., 119 Milk street, Boston.

Stickney & Beatty, South Charles street, Baltimore.

May 6, 1848.

**JOHNSON, CAMMELL & Co's Celebrated Cast Steel,**

AND

**ENGINEERING AND MACHINE FILES,**

which for quality and adaptation to mechanical uses, have been proved superior to any in the United States.

Every description of square, octagon, flat and round cast steel, sheet, shovel and railway spring steel, best double and single shear steel, German steel, flat and square, goat stamps, etc. Saw and file steel, and steel to order for any purposes, manufactured at their Cyclops Steel Works Sheffield.

**JOHNSON, CAMMELL & CO.,**

100 William St., New York.

November 23 1849.

**To Steam Engine Builders.**

THE Undersigned offer for sale, at less than half its cost, the following new machinery, calculated for an engine of 62 inches cylinder and 10 feet stroke, viz.

2 Wrought Iron Cranks, 60 inches from centre to centre.

1 Do. do. Connecting Rod Strap.

2 Do. do. Crank Pins.

1 Eccentric Strap.

1 Diagonal Link with Brasses.

1 Cast Iron Lever Beam (forked).

The above machinery was made at the West Point Foundry for the U. S. Steamer Missouri, without regard to expense, is all finished complete for putting together, and has never been used. Drawings of the cranks can be seen on application to

**HENRY THOMPSON & SON,**  
No. 57 South Gay St., Baltimore, Md.

Sept. 12, 1849.

**P. H. Griffin.**

Corner of Steuben and James Sts. Albany, N.Y., CONTINUES to manufacture copper flues for locomotive boilers, brewers' coppers, stills, tanner heaters, etc. Copper work in general, at the shortest notice. He has constantly on hand brass cocks, brass valves, copper pumps of every variety.

Orders promptly attended to.

1y14

**To Railroad Companies.**

**FOR SALE**—A Second-hand Locomotive Engine and Tender, of about 10 tons weight, in good order, and warranted to perform well. Any company wanting a cheap engine for a passenger or light burden train, will rarely meet with an opportunity so favorable as the present. The engine and tender are in perfect running order, and will be tested to the satisfaction of any one wishing to purchase. Price \$1,500.

Address

**J. B. MOORHEAD,**

Frazer P.O., Chester county, Pa.

P.S.—The Engine can be seen by calling on H. Osmond & Co., Car-builders, Broad st., Philadelphia.

September 6, 1849.

**India-rubber for Railroad Cos.**

**RUBBER SPRINGS**—Bearing and Buffer—Fuller's Patent—Hose from 1 to 12 inches diameter. Suction Hose. Steam Packing—from 1-16 to 2 in. thick. Rubber and Gutta Percha Bands. These articles are all warranted to give satisfaction, made under Tyer & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

**HORACE H. DAY,**

Warehouse 23 Courtlandt street.

New York, May 21, 1849.

**To Railroad Companies and Contractors.**

**FOR SALE**—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains.

They weigh, in running order, about 8 tons each—having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in. diameter, and 18 inches stroke of piston. Tenders on 4 wheels. Address **JAMES ROWLAND,**

Prest. Beaver Meadow Railroad & Coal Co.,

Philadelphia.

or, **L. CHAMBERLAIN, Sec'y,**

at Beaver Meadow, Pa.

May 19, 1849.

**Rosendale Cement.**

**THE NEWARK AND ROSENDALE LIME AND CEMENT CO.** are now manufacturing at their works in NEWARK, N. J., and Ulster county, N.Y., a very superior article of Hydraulic Cement—also Lime Calcine Plaster, etc. Contractors and dealers will find it to their advantage to call or make application before purchasing elsewhere. All communications addressed to the subscriber, at Newark, N.J., will be punctually attended to.

1y15

**HENRY WILDE, Secretary.**



# NORRIS' LOCOMOTIVE WORKS, SCHENECTADY, N. Y.

THESE Works are in full operation in Manufacturing to order, Locomotive Steam Engines & Tenders, of the best principle and construction of material, using wrought iron heavy frames with pedestals welded thereto, and all parts of the engine made of the best wrought iron, except cylinders, pumps and boxes—obtaining greater durability, and carrying less weight over the road, than engines constructed of cast iron. Wrought Iron Tires made any required size, and Tire Bars bent and welded with dispatch. Chilled Wheels for Cars, Trucks and Tenders, made from the toughest iron. Driving and Tender and Car Wheels fitted to Axles with Brass Boxes and Springs, and Railroad Machinery generally. Manufactured and for sale by

April 11, 1849. E. S. NORRIS.

## To the Proprietors of Rolling Mills and Iron Works.

THE Undersigned—Proprietors of Townsend's Furnace and Machine Shop, Albany—are extensively engaged in the manufacture of Machinery and fixtures for Iron, and Copper Rolling Mills, and Iron Works. Having paid particular attention to the manufacture of *Rolls (Rollers)*, both *chilled and dry-sand*, they feel confident that they can execute orders for such castings in a satisfactory manner. And to give assurance of this, they beg leave to refer to the following named persons, proprietors and managers of some of the most extensive rolling mills in the country, viz: Jno. F. Winslow, J. Tuckerman, H. Burden, W. Burtt, J. & J. Rogers, Saltus & Co., J. B. Bailey, L. G. B. Cannon, Hawkins & Atwater, etc., etc.

F. & T. TOWNSEND.

Albany, August 18, 1849.

## Passenger Car Linings.

THE Advertiser continues to make to order the Enamelled Car Linings which have been so highly approved the last three years, and are now exclusively used by all the Northern Railroads. No pains are spared to get out new styles, and adapt them to the tastes of every consumer.

Orders addressed to CHARLES STODDER, No. 75 Kilby street, Boston, will have prompt attention. March 23, 1850. 2m

## CAUTION.

RAILROAD COMPANIES and others are hereby cautioned against using or vending our improvement for easing the lateral motion as applied on Railroad Cars. Letters Patent having been granted to us in 1841, any party or parties so making or using said improvement without license from us will be proceeded against according to law.

DAVENPORT & BRIDGES.

## FOWLER M. RAY'S Patent India-rubber Railroad CAR SPRING.

New York and Erie Railroad Shops.  
Piermont, March 26, 1850.

This will certify that from practical experience in the use of Fowler M. Ray's India rubber Car Springs, I believe them to be far superior to any others now in use.

I have never known them to be affected by any change of temperature, as other Rubber Springs have been affected on this road.

I am at the present time repairing a Passenger Car that Mr. Ray and myself mounted with his springs about two years and eight months since.

The springs are at the present time as perfect, to all appearances, as when first applied to the car.

Respectfully yours,

HORACE B. GARDNER,  
Foreman of the Car Shops.

Supt. Office N.Y. & H. R.R.,  
New York, March 8, 1850.

This is to certify that we have used the Rubber Springs manufactured by Mr. F. M. Ray for the past twenty months, "both for Passenger and Freight Car Springs and Bumpers, and of different sizes" and have in every case given entire satisfaction, and I consider them the best spring now in use.

M. SLOAT, Supt.

Harlem R.R. Depot,  
New York, March 7, 1850.

This is to certify that we have used Mr. F. M. Ray's India-rubber Springs for over eighteen months, and find them to be easy and durable, and recommend them to railroad companies as being superior to anything we have tried.

J. M. SMART,  
Foreman at 42d St. Depot.

Office New Jersey Railroad Co.,  
Jersey City, March 8, 1850.

FOWLER M. RAY, Esq.,

Dear Sir: In answer to your enquiries respecting the operation of the Vulcanised Rubber Springs, purchased by our company from you some two years since, I reply that they are superior to any spring in use, (that I have either seen or heard of).

The improved form of your spring, consisting of a solid piece of vulcanised rubber with bands on the outside, is far superior to your first form, consisting of disks of rubber with metallic plates interposed.

The last named form was tried, if you recollect, at a much earlier period; and then was replaced by your last form.

I have no hesitation in saying that your springs have given entire satisfaction, and most cheerfully recommend them to railroad companies throughout the country for the following reasons:

- 1st. The cost is 30 per cent. less.
- 2d. Saving of weight on each car of 8 wheels from 700 to 800 lbs.
- 3d. Less care and attention is required, as they are not liable to get out of repair.
- 4th. A great saving is secured in the wear and tear of the cars and rails from their great elasticity.
- 5th. The freedom from noise.
- 6th. There is greater safety in case of accident, as they cannot be broken.
- 7th. The comfort of passengers is enhanced sufficiently to pay the expense, waiving all the other reasons that I have given.

Should this fail to satisfy any person enquiring, you are at liberty to refer to me, No. 150 Washington St., Jersey City. Yours respectfully,

T. L. SMITH, Supt.

New York, March 11, 1850.

I have used the Patent India-rubber Spring purchased of Mr. Ray, upon the cars of the New York and New Haven Railroad, and have found them efficient and economical; and when applied to the axles and draw springs, believe them to be quite equal to any in use. I have found a combination of these springs with a steel spring under the transom beam a very satisfactory arrangement, and am now using this plan in all new cars.

Yours respectfully,  
ROBERT SCHUYLER.

February 25, 1850.

From practical observation of the use of the India-rubber Car Springs, manufactured and sold by your company, we are entirely satisfied in their application, and do not hesitate to recommend them as elastic, durable, requiring no repairs for years, and retaining their consistency during all extremes of weather. We have applied them for the past two years, and consider them superior for all railroad purposes.

Yours truly,

OSGOOD BRADLEY, Car Builder, Worcester.  
T. & C. WASON, do. Springfield.  
DEAN, PACKARD & MILLS, do. do.  
DAVENPORT & BRIDGES, do. Cambridgeport.

Office of the New Jersey Railroad Co.,  
Jersey City, March 7, 1850.

This is to certify that we have had Mr. F. M. Ray's India-rubber Springs in constant use under our cars, and as Bumper Springs for upwards of two years, and they have in every way given perfect satisfaction.

The present form of spring we deem far superior to the form of Disk, having used both forms, although we have none of those made in Disks at present in use.

We take pleasure in recommending these springs to all railroad companies.

J. P. JACKSON, Vice Pres.  
New Jersey Railroad and Trans. Co.

Roxbury, February 28, 1850.

In compliance with your request, I take great pleasure in stating the result of my experience in the use of "Ray's Patented Vulcanised India-rubber Car and Engine Springs." We have used them nearly two years, and never had one fail in any way. The cold weather does not affect them, as it has other rubber springs we have used.

With sixteen years' experience as superintendent of machinery on the Boston and Providence railroad, I take pleasure in saying that your springs are the best we ever used, or I ever saw used elsewhere. We have 20 cars rigged with them, of which I can say that the springs are as good now as when first applied. I put 24 lbs. of the rubber under the forward end of one of our heaviest engines, taking off 250 lbs. of steel springs—it has been in use 18 months, and is in as good condition now as when first put under the engine.

Very respectfully yours,

GEO. S. GRIGGS,  
Supt. of Machinery, Boston and Prov. R.R.

Fall River, February 2, 1850.

In answer to yours of the 20th ult. I would say that this company has for some 10 or 12 months past been using "Ray's India-rubber Springs." We have applied them to both passenger and freight cars with uniform success. They have invariably preserved their elasticity and consistency through all the extremes of weather; and we are now applying them whenever the steel spring fails. I am well satisfied that they are particularly adapted for railroad purposes.

Very respectfully yours,

GEO. HAVEN,  
Supt. Fall River Railroad.

Jersey City, March 9, 1850.

This is to certify that the present form of Mr. F. M. Ray's India-rubber Car Spring I consider far superior to the form of Disk, having used both forms.

I take pleasure in recommending these springs to all railroad companies. DAVID H. BAKER,  
Foreman of Car Shop of N.J. R.R. & Trans. Co.

Boston, March 5, 1850.

In answer to your enquiry about India-rubber Springs, I have to say that we have used them to a considerable extent on both freight and passenger cars, and also on several of our tenders; and I am very well satisfied that they answer all the purposes for which they are intended. I believe the India-rubber will soon supersede all other springs for cars and tenders.

Yours truly, S. M. FELTON,

Supt. Fitchburg Railroad.

Old Colony Railroad Office,  
Boston, March 6, 1850.

EDWARD CRANE, Esq.,

President New England Car Co.,

Dear Sir: In compliance with your request I would state that the Old Colony Railroad Comp'y have had in use upon their road, India-rubber Springs furnished by your company, for more than eighteen months past, during which time they have been extensively used under Passenger and Freight Cars, Locomotive Tenders, and for Drawer and Buffering Springs, with the most perfect success. The elasticity and consistency of the Rubber has never been unfavorably affected by either extremes of heat or cold—and from the experience which we have had in the use of Rubber Springs, I think them well adapted for railroad purposes—and therefore we have for some months past used Rubber almost exclusively, in all places where springs are required.

Respectfully yours, etc.,

JAS. H. MOORE,  
Supt. O. C. Road.

Troy, February 27, 1850.

We have been using your India-rubber Car Springs for nearly two years—and we take pleasure in saying that in our opinion the rubber has to a certain extent already, and may eventually entirely supersede all other Springs for Railroad Car purposes. We now use it entirely for Draw Springs and Bumpers, considering it better and lighter than steel.

During our two years' experience in the use of it, we have not known any to lose their elasticity, or fail in any way; and we cheerfully recommend the rubber for railroad car springs. Very respectfully,  
EATON, GILBERT & CO.

## To Practical Machinists.

AN excellent opportunity now occurs to a practical Machinist, of WELL ESTABLISHED REPUTATION, and some capital, to engage extensively in the STEAM ENGINE, BOILER AND FOUNDRY BUSINESS.

An establishment is now ready for business, ample in all its details, including extensive wharf room, for any sized steamboats, and from its position, if properly conducted, will doubtless command a large share of business.

A practical Machinist, as a partner is required, to conduct the whole establishment: and only those FULLY COMPETENT need apply. Address (post paid) "MACHINE CO.," Box No. 741, Philadelphia, Pa. 1m14

## Etna Safety Fuse.

THIS superior article for igniting the charge in wet or dry blasting, made with DUPONT'S best powder, is kept for sale at the office and depot of

REYNOLDS & BROTHER,

Sole Manufacturers, 41

No. 85 Liberty St.

NEW YORK.

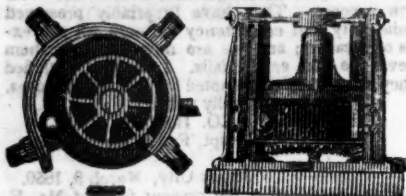
And in the principal cities and towns in the U. States. The Premium of the AMERICAN INSTITUTE was awarded to the Etna Safety Fuse at the late Fair held in this city.

November 3, 1849.

ly

## MACHINERY.

## Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shingler's, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll sounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y. P. A. BURDEN.

## Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent,  
Troy Iron and Nail Factory, Troy, N. Y.

## RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

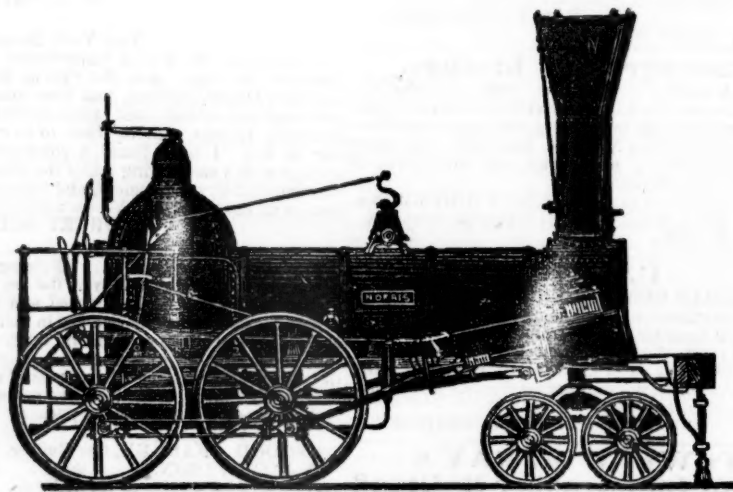
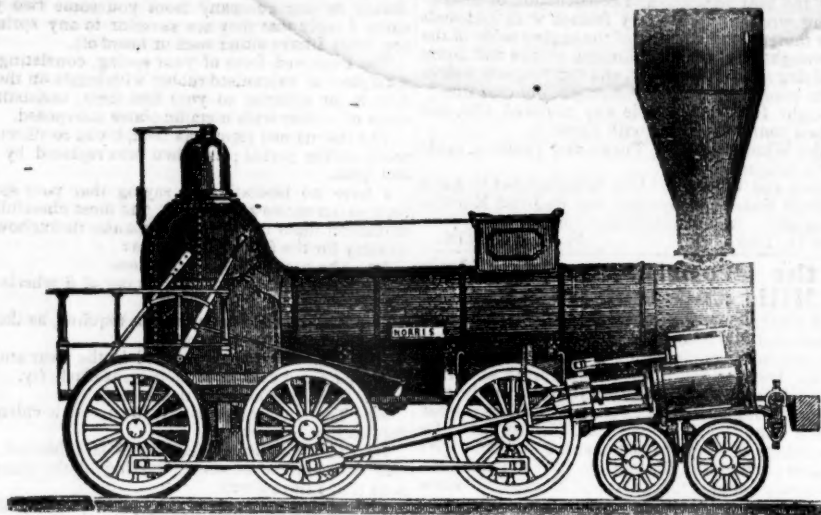
A. WHITNEY & SON,  
Willow St., below 13th,  
Philadelphia, Pa.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED, the Original Inventor of the Plate Wheel with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

A. TIERS,  
Point Pleasant Foundry.

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country.

A. T.  
Kensington, Philadelphia Co.,  
March 12, 1848.

NORRIS' LOCOMOTIVE WORKS.  
BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,

THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS, BROTHERS

LAWRENCE'S ROSENDALE HYDRAULIC Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Floods, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by

JOHN W. LAWRENCE,  
142 Front-street, New York.

Orders for the above will be received and promptly attended to at this office. 32 ly.

## PATENT MACHINE MADE HORSE-SHOES.

The Troy Iron and Nail Factory have always on hand a general assortment of Horse Shoes, made from Refined American Iron.

Four sizes being made, it will be well for those ordering to remember that the size of the shoe increases as the numbers—No. 1 being the smallest.

P. A. BURDEN, Agent,  
Troy Iron and Nail Factory, Troy, N. Y.

COLUMBUS, OHIO,  
Railroad Car Manufactory.  
RIDGWAYS & KIMBALL,

HAVE established at this central point, the manufacture of Passenger, Freight, Gravel and Hand Cars for Railroads, and assure all Western Railroad Companies that it will be their constant aim to procure the best materials and workmen, and to turn out the best kind of work at fair prices. Specimens may be seen on the Columbus and Xenia Railroad. The patronage of Railroad Companies is respectfully solicited. 178

## To Inventors and Patentees.

OWEN G. WARREN, ARCHITECT, Has had many years' experience as Agent for obtaining Patents, both in this country and Europe, and will transact such business promptly and reasonably. Persons at a distance can have their business done by correspondence—without the necessity of visiting this city or Washington. Office No. 94 Merchants Exchange, Wall st., corner of Hanover st., up stairs. 173



**Mr. Hale:**—"The New England Car Co., having been engaged for the last six months in introducing the Vulcanized India-rubber Car Springs upon the different railroads in this and other states, and having in particular introduced it upon the Boston and Worcester railroad with perfect success, were much gratified to find, by your paper of this morning, that the article had given satisfaction to the president of that corporation, and the terms of just commendation in which you were pleased to speak of it. But their gratification was scarcely equalled by their surprise, when, or arriving at the close of your paragraph, they found the results of all their labors attributed to a foreign source, with which the New England Car Co. has no connection. The material used on the Boston and Worcester railroad, and all the other railroads in this country, where any preparation of India-rubber has been successfully applied, is entirely an American invention, patented in the year 1844 to Charles Good-year, of New Haven, Conn., and the application of it to this purpose and the form in which it is applied are the invention of F. M. Ray of New York. The only material now in use, and so far as has yet appeared, the only preparation of India rubber capable of answering the purpose, has been furnished under these patents by the New England Car Company, manufactured under the immediate inspection of their own agent. If any other should be produced, the right to use it would depend upon the question of its interference with Mr. Goodyear's patent. The New England Car Company have their place of business in this city at No. 99 State street, and are prepared to answer all orders for the Vulcanized India rubber Car Springs, of the same quality and of the same manufacture as those which they have already placed on your road, and most of the other roads terminating in this city."

And yet Mr. Knevelt is using these experiments made upon the Springs of the Car Company to induce the public to purchase his springs, and is attempting to impose upon them the belief that the springs used were furnished by him! We ask whether such a course is honorable, or entitles his statements to much consideration from the public.

The above Springs are for sale 98 Broadway, New York, and 99 State street, Boston.

EDWARD CRANE Agent, Boston.  
F. M. RAY, Agent, New York.

Boston, May 8, 1849.

## Ballard's Improved JACK-SCREW.

PATENTED.

**THE ADVANTAGES OF THIS** Screw for Stone Quarries, Railroads, Steam Boiler Builders, and for other purposes are superior to any other similar machine.

The improvement consists in being able to use either end of the screw, as occasion requires.

It is capable of raising the heaviest Locomotive with ease, being portable, strong and powerful, and not likely to get out of order.

Many Railroad Companies and Boiler Makers have them in use—by whom they are highly recommended.

### JACK SCREWS,

of various sizes, power and price, constantly on hand at the manufactory.

No. 7 Eldridge Street,  
near Division Street.  
New York, Jan. 19, 1850.



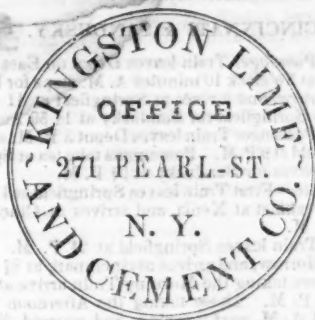
**NICOLL'S PATENT SAFETY SWITCH FOR** Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee, G. A. NICOLLS, Reading, Pa.

## Hydraulic Cement.



**HYDRAULIC CEMENT, OF BEST QUALITY,** manufactured at their works, for sale in lots to suit purchasers.

Also, Ground Lime, a superior article for Builders.  
ISAAC FRYER, Sec'y.

January 19, 1850.

## Engine and Car Works, PORTLAND, MAINE.

**THE PORTLAND COMPANY,** Incorporated August 8th, 1846, with a capital of \$250,000, have erected their extensive Works upon the deep water of Portland Harbor, and receive and transport, to and from their works direct, to and from vessels of any class.

They now manufacture to order, and deliver upon the Railroads running in each direction from the city, or on shipboard as wanted, Locomotive, Stationary, or Steam Boat Engines; Passenger, Mail, Freight, Earth and Hand Cars; Railway Frogs, Switches, Chairs and Castings; and every other description of Machinery.

HORACE FELTON,  
Superintendent.

JAMES C. CHURCHILL,  
General Agent and Clerk.

## RAILROADS.

### EASTERN RAILROAD.

#### WINTER ARRANGEMENT.

On and after Monday, October 8, 1849, trains leave Boston daily (Sundays excepted):  
For Lynn, 7, 8 $\frac{1}{2}$ , 10 a.m., 12 $\frac{1}{2}$ , 2 $\frac{1}{2}$ , 4, 4 $\frac{1}{2}$ , 6 $\frac{1}{2}$  p.m.  
Salem, 7, 8 $\frac{1}{2}$ , 10 a.m., 12 $\frac{1}{2}$ , 2 $\frac{1}{2}$ , 4, 4 $\frac{1}{2}$ , 6 $\frac{1}{2}$  p.m.  
Manchester and Gloucester, 10 a.m., 4 p.m.  
Newburyport, 7 a.m., 12 $\frac{1}{2}$ , 2 $\frac{1}{2}$ , 4 $\frac{1}{2}$  p.m.  
Portsmouth, 7 a.m., 2 $\frac{1}{2}$ , 4 $\frac{1}{2}$  p.m.  
Portland, Me., 7 a.m., 2 $\frac{1}{2}$  p.m.

And for Boston,

From Portland, 8 $\frac{1}{2}$  a.m., 4 p.m.  
Portsmouth, 7, 10 $\frac{1}{2}$  a.m., 6 $\frac{1}{2}$  p.m.  
Newburyport, 7 $\frac{1}{2}$ , 11 $\frac{1}{2}$  a.m., 3 $\frac{1}{2}$ , 7 $\frac{1}{2}$  p.m.  
Gloucester, 7 $\frac{1}{2}$  a.m., 1 p.m.  
Manchester, 8 a.m., 2 p.m.  
Lynn, 7 $\frac{1}{2}$ , 8 $\frac{1}{2}$ , 9 $\frac{1}{2}$ , 10 $\frac{1}{2}$  a.m., 12 55\*, 2 $\frac{1}{2}$ , 4 $\frac{1}{2}$ \* 8 $\frac{1}{2}$ \* p.m.  
Salem, 7 $\frac{1}{2}$ , 8 $\frac{1}{2}$ , 9\*, 10 $\frac{1}{2}$  a.m., 12 40\*, 2 $\frac{1}{2}$ , 4 $\frac{1}{2}$ \* 8\*, p.m.

\* Or on their arrival from the East.

Freight trains each way daily. Office 17 Merchants' Row, Boston.

Feb. 3. JOHN KINSMAN, Superintendent.

### ALBANY AND BUFFALO RAILROADS.

Four Trains daily, Sundays excepted, viz:  
Leave Albany, 6 a.m., 9 a.m., 2 p.m., 7 p.m.  
Reach Buffalo, 15 hours, 18 hours, 23 hours, 18 hours.

Arrive from Buffalo, 7 p.m., 2 $\frac{1}{2}$  a.m., 12 $\frac{1}{2}$  m., 3 $\frac{1}{2}$  p.m.  
Passengers by the Express Train reach Buffalo from New York, and New York from Buffalo, in 24 hours. The Isaac Newton and Oregon connect at Albany with this Train. Baggage cars, with careful baggage masters, run through with all the trains.

For Schenectady, Saratoga Springs & Whitehall, Leave Albany at 7 a.m. and 2 p.m. For Schenectady only at 6, 7 and 9 a.m. and 12 $\frac{1}{2}$ , 2 and 7 p.m. For Erie Canal packets at 7 a.m. and 7 p.m. By Plank Road from Schenectady to Saratoga at all hours by stages, etc.

The Eastern Trains leave Albany at 7 a.m. and 3 p.m. The wagons of the company take baggage free between railroads and steamboats at Albany.

E. FOSTER, Jr., Sec'y  
Albany and Schenectady Railroad Co.  
Albany, August, 1849.

## BOSTON AND MAINE RAILROAD.

**Winter Arrangement, 1850.**  
Outward Trains from Boston  
For Portland at 7 a.m. and 2 $\frac{1}{2}$  p.m.  
For Rochester at 7 a.m., 2 $\frac{1}{2}$  p.m.  
For Great Falls at 7 a.m., 2 $\frac{1}{2}$ , 3 $\frac{1}{2}$  p.m.  
For Haverhill at 7 and 9 $\frac{1}{2}$  a.m., 2 $\frac{1}{2}$ , 3 $\frac{1}{2}$ , 5 $\frac{1}{2}$  p.m.  
For Lawrence 7, 7 $\frac{1}{2}$ , 9 $\frac{1}{2}$  a.m., 12m, 2 $\frac{1}{2}$ , 3 $\frac{1}{2}$ , 4 $\frac{1}{2}$ , 5 $\frac{1}{2}$  p.m.  
For Reading 7, 9 $\frac{1}{2}$  a.m., 12m, 2 $\frac{1}{2}$ , 3 $\frac{1}{2}$ , 4 $\frac{1}{2}$ , 5 $\frac{1}{2}$ , 7 $\frac{1}{2}$ , 9 $\frac{1}{2}$  p.m.  
For Medford 7 $\frac{1}{2}$ , 9 $\frac{1}{2}$  a.m., 12 $\frac{1}{2}$ , 2 $\frac{1}{2}$ , 5, 6 $\frac{1}{2}$ , 9 $\frac{1}{2}$  p.m.  
The Station in Boston is on Haymarket Square.  
CHAS. MINOT, Super't.

January 10, 1850.

## NEW YORK AND HARLEM RAILROAD. NEW ARRANGEMENT.

On and after Wednesday, October 17th, 1849, the Cars will run as follows, (Sundays excepted) until further notice:  
Trains will leave the City Hall, New York, for—  
Harlem and Morrisania at 6 $\frac{1}{2}$ , 8, 10, 11, 12 a.m., 2, 3 $\frac{1}{2}$ , 4, 5, 6 $\frac{1}{2}$  p.m.  
New Village, at 8 $\frac{1}{2}$ , 10, 12 a.m., 3 $\frac{1}{2}$ , 5, 6 $\frac{1}{2}$  p.m.  
Fordham and Williams' Bridge, at 8 $\frac{1}{2}$ , 10, 12 a.m., 2 $\frac{1}{2}$ , 3 $\frac{1}{2}$ , 5, 6 $\frac{1}{2}$  p.m.  
Hunt's Bridge, Underhill's and Hart's Corners, at 8 $\frac{1}{2}$ , 10 a.m., 3 $\frac{1}{2}$ , 5 p.m.  
Tuckahoe and White Plains, at 8 $\frac{1}{2}$ , 10 a.m., 2 $\frac{1}{2}$ , 3 $\frac{1}{2}$ , 5 p.m.  
Pleasantville, New Castle, Bedford, Mechanicsville, Purdy's, Croton Falls, and intermediate stations, on signal, 8 $\frac{1}{2}$  a.m., 2 $\frac{1}{2}$ , 3 $\frac{1}{2}$  p.m.  
Brewster's, Towner's, Patterson, Paulding's, South Dover, Dover Furnace, and Dover Plains, 8 $\frac{1}{2}$  a.m., 2 $\frac{1}{2}$  p.m.

**NOTICE**—Passengers are reminded of the great danger of standing upon the platform of the cars, and hereby notified that the practice is contrary to the rules of the Company, and that they do not admit any responsibility for injury sustained by any passenger upon the platforms, in case of accident.

Returning to New York will leave  
Harlem and Morrisania at 6 08, 7 $\frac{1}{2}$ , 8 37, 9, 10 6, 12 a.m., 1 43, 3 07, 3 $\frac{1}{2}$ , 5, 5 47 p.m.  
New Village, at 5 58, 8 27, 9 56 a.m., 1 33, 2 57, 5 36 p.m.  
Fordham and William's Bridge at 5 $\frac{1}{2}$ , 8 14, 9 43, 10 57 a.m., 1 20, 2 44, 5 24 p.m.  
Hunt's Bridge at 8 04, 9 33 a.m., 2 34, 5 16 p.m. On signal.  
Underhill's, at 7 56, 9 23 a.m., 2 26, 5 10 p.m. On signal.  
Tuckahoe at 7 53, 9 18, 10 40 a.m., 2 23, 5 08 p.m.  
Hart's Corners at 7 38, 9 03 a.m., 2 08, 4 44 p.m.—On signal.  
White Plains at 7 $\frac{1}{2}$ , 8 55, 10 20 a.m., 2, 4 47 p.m.  
Davis' Brook at 8 40, 10 11 a.m., On signal. 4 39 p.m. On signal.  
Unionville, 8 27, 10 11 a.m. On signal. 4 29 p.m.—On signal.  
Pleasantville at 8 20, 9 56 a.m., 4 24 p.m.  
Chappaqua, at 8 10, 9 50 a.m. On signal. 4 18 p.m. On signal.  
New Castle, at 7 56, 9 38 a.m., 4 07 p.m.  
Bedford at 7 46, 9 32 a.m., 4 02 p.m.  
Mechanicsville at 7 36, 9 22 a.m., 3 52 p.m.  
Golden's Bridge, 7 28, 9 17 a.m. On signal, 3 47 p.m. On signal.  
Purdy's at 7 20, 9 09 a.m., 3 39 p.m.  
Croton Falls, at 7 $\frac{1}{2}$ , 9 04 a.m., 3 34 p.m.  
Brewster's, at 8 50 a.m., 3 20 p.m.  
Towner's, at 8 35 a.m., 3 05 p.m.  
Patterson, at 8 27 a.m., 2 57 p.m.  
Paulding's, at 8 17 a.m., 2 47 p.m.  
South Dover, 8 02 a.m., 2 32 p.m.  
Dover Furnace, 7 55 a.m., 2 25 p.m.  
Dover Plains, at 7 45 a.m., 2 15 p.m.

The trains for Harlem and Morrisania leaving City Hall at 6 $\frac{1}{2}$ , 8, 10, 11, 12, 2, 4 and 6 $\frac{1}{2}$ , returning from Morrisania and Harlem at 6 08, 7 $\frac{1}{2}$ , 9, 12, 1 43, 3 07, 3 $\frac{1}{2}$  and 5 o'clock, will land and receive passengers at 27th 42d, 51st, 61st, 79th, 86th, 109th, 115th, 125th and 132d streets.

The Dover Plains train from New York at 2 $\frac{1}{2}$  p.m., returning leaving Dover Plains at 7 $\frac{1}{2}$  a.m., will not stop between White Plains and New York, (except at Tuckahoe, Williams' Bridge and Fordham), unless to leave passengers coming from above Croton Falls.

A car will precede each train ten minutes to take up passengers in the city. The last car will not stop, except at Broome st. and 27th street.

Freight Trains leave New York at 1 o'clock p.m.—Returning, leaves Dover Plains at 12 o'clock m.  
For Sunday Arrangements, see hand bills.

M. SLOAT, Sup't.

# AMERICAN RAILROAD JOURNAL.

## NEW YORK AND ERIE RAILROAD. CHANGE OF HOURS.

On and after Monday, May 6, 1850, the trains will leave as follows, by steamboat THOMAS POWELL, from the foot of Duane st. daily (Sundays excepted). Breakfast and supper on board the boat.

**WAY AND MAIL TRAIN**—At 6½ a.m., stopping at all the stations—arriving at Corning and Jefferson about 10½ p.m., and at Buffalo next morning.

**NIGHT TRAIN**—at 5 p.m., stopping at all the stations and arriving at Geneva in time to connect with the Express train from Albany, and arrive at Buffalo at 7 p.m., next day.

**AN EXPRESS TRAIN**—Will commence running in a few days, of which due notice will be given.

**FREIGHT TRAIN**—Leave New York, from foot of Duane st. daily, (Sundays excepted) at 5 p.m. Freight for Geneva, Rochester and Buffalo, forwarded by Express freight train. CHAS. MINOT, Supt. New York, May 2, 1850.

## GEORGIA RAILROAD. FROM AUGUSTA TO ATLANTA—171 MILES.

AND WESTERN AND ATLANTIC RAILROAD, FROM ATLANTA TO DALTON, 100 MILES.

This Road, in connection with the South Carolina Railroad, and Western and Atlantic Railroad, now forms a continuous line, 408 miles in length, from Charleston to Dalton (Cross Plains) in Murray county, Ga. 32 miles from Chattanooga, Tenn.

### RATES OF FREIGHT.

		Between Augusta and Dalton, 271 miles.	Between Charleston and Dalton, 408 miles.
1st class	Boxes of Hats, Bonnets, and Furniture, per cubic foot	\$0 18	\$0 23
2d class	Boxes and Bales of Dry Goods, Saddlery, Glass, Paints, Drugs, and Confectionary, per 100 lbs.	1 00	1 50
3d class	Sugar, Coffee, Liquor, Bagging, Rope, Cotton, Yarns, Tobacco, Leather, Hides, Copper, Tin, Feathers, Sheet Iron, Hollow ware, Castings, Crockery, etc.	0 60	0 85
4th class	Flour Rice, Bacon, Pork, Beef, Fish, Lard, Tallow, Beeswax, Bar Iron, Ginseng, Mill Gearing, Pig Iron, and Grindstones, etc.	0 40	0 65
	Cotton, per 100 lbs.	0 45	0 70
	Molasses per hoghead	8 50	13 50
	" " barrel	2 50	4 25
	Salt per bushel	0 18	
	Salt per Liverpool sack	0 65	
	Ploughs, Corn Shellers, Cultivators, Straw Cutters, Wheelbarrows	0 75	1 50

German or other emigrants, in lots of 20 or more, will be carried over the above roads at 2 cents per mile.

Goods consigned to S. C. Railroad Company will be forwarded free of commissions. Freight payable at Dalton. F. C. ARMS, Supt of Transportation.

## To Miners and Mining Companies.

THE undersigned would respectfully call the attention of those persons engaged in mineral operations on Lake Superior to the following list of articles which will be sold on accommodating terms, viz:

- 600 bbls. Corn fed No. 1 Mess Pork.
- 500 " Stall fed Mess Beef.
- 25,000 lbs. "Sugar cured canvassed" Hams.
- 2,200 " Dried Cured.
- 60,000 " "Kiln dried" Corn Meal.
- 500 bush. White "Field" Beans.
- 300 " Canada" Peas.
- 500 " Dried Apples.
- 100 bbls. and half bbls. "cucumber" Pickles.
- 50 " Sour Krou.
- 30 bush. Onions.
- 1,000 Beefs' Tongues Smoked and in Pickle.
- 10,000 lbs. "Mould" Candles.
- 10,000 " "Hard" Soap.

Also, a full and large supply of all articles that may be required by Mining Companies and those connected with them. C. A. TROWBRIDGE, 127 Jefferson Avenue, Detroit, Michigan.

## LITTLE MIAMI RAILROAD.—SUMMER ARRANGEMENT.

### CINCINNATI & SANDUSKY.

FIRST Passenger Train leaves Depot on East Front street, at 5 o'clock 10 minutes A. M. stops for breakfast at Morrow, and arrives at Springfield at 11 10 A. M. Leaves Springfield for Sandusky at 11 50 A. M.

Second Passenger Train leaves Depot 3 P. M. arrives at Springfield at 9 P. M. Passengers take tea at Springfield, and leaves for Sandusky at 9½ P. M.

RETURNING—First Train leaves Springfield at 4 A. M. Stop for breakfast at Xenia, and arrives at Cincinnati at 10 15 A. M.

Second Train leaves Springfield at 2½ P. M. Stop for tea at Morrow, and arrives at Cincinnati, at 8½ P. M.

Passengers taking the Morning Train arrive at Sandusky at 9 P. M. Those taking the Afternoon Train arrive at 7½ A. M. next morning, and proceed directly on in the boats.

Passengers for Columbus, Zanesville, Wheeling, and intermediate towns, should take the 5, 10 A. M. Train. The Ohi Stage Company are running the following Lines in connection with the Trains:

A Daily Daylight Line to Columbus from Springfield in connection with the Morning Train from Cincinnati. Also, Daily Lines to Columbus, from Xenia and Springfield, connecting with the 3 o'clock, pm. Train from Cincinnati.

Fare from Cincinnati to Xenia	-	-	\$1 90
Do do Springfield	-	-	2 50
Do do Sandusky City	-	-	6 50
Do do Buffalo	-	-	10 00
Do do Columbus	-	-	4 50

For other information and through tickets, apply at the Ticket Office on Broadway, near Front-st., Cincinnati.

W. H. CLEMENT, Superintendent.

The Company will not be responsible for Baggage exceeding 50 dollars in value, unless the same is returned to the Conductors or Agent, and freight paid at the rate of a passage for every 500 dollars in value above that amount.

## PHILADELPHIA, WILMINGTON, & BALTIMORE RAILROAD.

### Summer Arrangement.

April 1st, 1849.—Fare \$3. Leave Philadelphia 8½ am., and 10 pm. Leave Baltimore 9 am. and 8 pm. Sunday—Leave Philadelphia at 10 pm. Baltimore at 8 pm. Trains stop at way stations.

Charleston, S. C. Through tickets Philadelphia to Charleston, \$20. Pittsburgh and Wheeling.

Through ticket, Philadelphia to Pittsburgh, \$12. Wheeling, 13. Through tickets sold at Philadelphia office only.

Wilmington Accommodation. Leave Philadelphia at 12 m. 4 and 7 pm. Leave Wilmington at 7½ am., 4½ and 7 pm.

Newcastle Line. Leave Philadelphia at 2½ pm.—Baltimore at 1½ pm. Fare \$3.—Second class, \$2.

N.B.—Extra baggage charged for. I. R. TRIMBLE, Gen. Supt.

## BALTIMORE AND SUSQUEHANNA RAILROAD.—Reduction of Fare. Morning and Afternoon Trains between Baltimore and York.—The Passenger Trains

run daily, except Sundays, as follows:

Leave Baltimore at - - - 9 am. and 3½ pm. Arrive at - - - 9 am. and 6½ pm. Leave York at - - - 5 am. and 3 pm. Arrive at - - - 12½ pm. & 8 pm.

Leave York for Columbia at - - - 1½ pm. & 8 am. Leave Columbia for York at - - - 8 am. & 2 pm.

Fare to York - - - \$1 50 " Wrightsville - - - 2 00 " Columbia - - - 2 12½

Way points in proportion. PITTSBURG, GETTYSBURG, AND HARRISBURG.

Through tickets to Pittsburgh via stage to Harrisburg - - - \$9 Or via Lancaster by railroad - - - 10

Through tickets to Harrisburg or Gettysburg - - - 3 In connection with the afternoon train at 3½ o'clock, a horse car is run to Green Spring and Owings' Mill, arriving at the Mills at - - - 5½ pm.

Returning, leaves Owings' Mills at - - - 7 am. D. C. H. BORDLEY, Supt. Ticket Office, 63 North st.

## PHILADELPHIA & READING RAILROAD. Passenger Train Arrangement for 1848.

A Passenger Train will leave Philadelphia and Pottsville daily, except Sundays, at 9 o'clock am.

The Train from Philadelphia arrives at Reading at 12 18 m.

The Train from Pottsville arrives at Reading at 10 43 am.

	Fares.	Miles.	No. 1.	No. 2.
Between Phila. and Pottsville,	92	\$3.50	and	\$3.00
" Reading	59	2.25	and	1.90
" Pottsville	34	1.40	and	1.20

Five minutes allowed at Reading, and three at other way stations.

Passenger Depot in Philadelphia corner of Broad and Vine streets. Stf.

## BALTIMORE AND OHIO RAILROAD AND WASHINGTON BRANCH.

On and after January 1, 1850, Passenger Trains will run as follows:

Leave Baltimore for Ellicott's Mills, Frederick, Harper's Ferry, Martinsburg, Hancock and Cumberland, every morning at 7½ o'clock. This line carries the Great Mail, and connects with Post Coaches at Cumberland, for Wheeling and Pittsburgh, over the National Road. Also with the Winchester Trains, at Harper's Ferry. N.B.—Passengers for Pittsburgh take the steamers of the Monongahela slack water navigation at Brownsville, only 76 miles from Cumberland.

Leave Baltimore for Ellicott's Mills, Frederick and Harper's Ferry, daily, except Sunday, at 4½ p.m.

Leave Baltimore for Washington City, daily, at 6 a.m. and 5 p.m.—daily, except Sunday, at 9 a.m. The early train connects with the Great Southern Line, via Fredericksburg and Richmond, to Charleston.

Leave Cumberland for Baltimore, etc., at 8½ a.m., daily, connecting with the train from Winchester at Harper's Ferry—with the Evening Train to Washington City, at the Relay House—and with the Evening Train to Philadelphia, at Baltimore. Time for arriving at Baltimore, 5½ p.m.

Leave Harper's Ferry for Baltimore, daily, except Sunday, at 7½ a.m.—taking in Passengers who leave Frederick at 8½ a.m.

Leave Washington for Baltimore, daily, at 6 a.m. & 5½ p.m., and daily, except Sunday, at 9½ a.m. The early train connects at the Relay House with the morning line to Cumberland and the West, and at Baltimore with the day line to Philadelphia and New York.

Through tickets are sold at Philadelphia and Baltimore for Pittsburgh and Wheeling, and at Philadelphia and New York for Charleston, S. C., at the following RATES OF FARE.

5½ p.m., and *daily, except Sunday*, at 9½ a. m. The early train connects at the Relay House with the morning line to Cumberland and the West, and at Balti-

Passengers leaving New York not later than the afternoon line via Newark, etc., reach Baltimore in season to take the next morning's lines to the South and West.

Passengers leaving Cumberland in the morning and Washington in the evening lines, reach Baltimore in season to proceed to Philadelphia by the evening train at 8 p.m.—so as to reach New York before noon the next day.

An Emigrant line by burthen cars, leaves Baltimore every morning, except Sundays, at 4 o'clock—connecting with a line of the previous day from N. York—and at Cumberland with a wagon line to Pittsburgh or Brownsville and Wheeling. Fare by this line:

From New York to Pittsburgh,	\$8 00
" Philadelphia	6 50
" Baltimore	5 00

By order, J. T. ENGLAND, Agent.

## SOUTH CAROLINA RAILROAD.—A Passenger Train runs daily from Charleston, on the arrival of the boats from Wilmington, on the N. C., in connection with trains on

the Georgia, and Western and Atlantic Railroads—and by stage lines and steamers connects with the Montgomery and West Point, and the Tusculum Railroad in N. Alabama.

Fare through from Charleston to Montgomery daily - - - \$26 50

Fare through from Charleston to Huntsville, Decatur and Tusculum - - - 22 00

The South Carolina Railroad Co. engage to receive merchandise consigned to their order, and to forward the same to any point on their road; and to the different stations on the Georgia and Western and Atlantic Railroad; and to Montgomery, Ala., by the West Point and Montgomery Railroad.

JOHN KING, Jr., Agent.



**LAKE SUPERIOR LINE.**  
Cleveland and Detroit,

SAULT STE. MARIE, CARP RIVER, COPPER HARBOR, EAGLE RIVER, ISLE ROYAL, ONTONAGON AND LA POINT.

The Proprietors of this line having added largely to their facilities for transportation on this route, will be prepared to ship Goods to any part of Lake Superior during the coming season, and contract for the delivery of Copper Ore to either Boston, New York, or Pittsburg, being connected with the Troy and Western Line, from Detroit to New York, and a Daily line of Canal Boats.

**FROM CLEVELAND TO PITTSBURG.****Lakes Huron and Erie.**

For this portion of the route, the Proprietors are fitting up a large Boat, with a powerful low pressure engine, and a spacious upper cabin, with state rooms, to take the place of the Franklin, which will leave CLEVELAND every Monday Evening at 7 o'clock, and DETROIT every Tuesday Afternoon at 2 o'clock, going to MACKINAW and the BRUCE MINES, and arriving at SAULT STE. MARIE on Thursday morning. The Franklin will leave Detroit every Friday for Mackinaw and Sault Ste. Marie, via the Bruce Mines. For the transportation of heavy masses of Copper, a Propeller will make trips as occasion may require.

**Lake Superior.**

Mr. McKnight, one of the Proprietors, is constructing a Wharf to the Channel Bank, at the head of the Portage, which will enable them to load their Propellers, NAPOLEON AND INDEPENDENCE, with but 24 hours' detention at Sault Ste. Marie. One of the Propellers will leave every Friday, making a trip through the Lake, touching at Carp River, Ontonagon and Isle Royal.

The great expense incurred in building wharves to facilitate business, it is hoped, will entitle the Proprietors of this Line to Patronage. Goods shipped by either G. WILLIAMS & CO., or S. P. BRADY, Agents, Detroit, will be receipted through to their destination on Lake Superior. Letters addressed to S. McKnight, Detroit, or Sault Ste. Marie, will receive attention. Supplies will be purchased and delivered at any point on Lake Superior, on the best possible terms, and all orders filled with articles of as good quality as the market affords.

**Canada Line.**

To facilitate the forwarding of Goods for the Canada Companies, a connection has been made with PARK & CO., managing owners of the Propeller *Earl Cathcart*, forming a direct line from Montreal to the Bruce Mines and Sault Ste. Marie. Goods sent by this line, care of PARK & CO., Amherstburg, or CHAS. HUNT, Esq., Windsor, will be immediately forwarded, and at prices decidedly to the advantage of parties in Toronto or other Canadian Ports.

S. McKnight,  
J. R. LIVINGSTON,  
P. B. BARBEAU.

January, 1850.

**AGENTS.**

G. Williams & Co., } Detroit.  
S. P. Brady, }  
P. L. Sternberg & Co., } Buffalo.  
Charles Hunt, Windsor.  
Park & Co., Amherstburg.  
W. A. Otis & Co., } Cleveland.  
Crawford and Chamberlain, }  
Rice, Clapp & CO., New York.  
W. M. Gorrie, Toronto.

**MACHINE WORKS OF ROGERS KETCHUM & GROSVENOR, Patterson, N. J.** The undersigned receive orders for the following articles manufactured by them of the most superior description in every particular. Their works being extensive, and the number of hands employed being large, they are enabled to execute both large and small orders with promptness and dispatch.

**Railroad Work.**—Locomotive Steam Engines and Tenders; Driving and other Locomotive Wheels, Axles Springs and Flange Tires; Car Wheels of Cast Iron a variety of patterns and chills; Car Wheels of Cast Iron with wrought tires; Axles of best American refined iron; springs; boxes and bolts for cars.

**Cotton, Wool and Flax Machinery** of all descriptions and of the most improved patterns, style and workmanship.

Mill gearing and millwright work generally, hydraulic and other presses; press screws; callenders; lathes and tools of all kinds; iron and brass castings of all descriptions.

**ROGERS, KETCHUM & GROSVENOR,**  
Patterson, N. J. or 74 Broadway, New York.

**CENTRAL RAILROAD FROM SAVANNAH TO MACON, (Ga.) 190 1/2 miles.**

Passenger Trains leave Savannah and Macon daily at 7 a.m.  
Passenger trains arrive daily at Savannah, 6 15 p.m.  
" " " " Macon, 6 45 p.m.

This road, in connection with the Macon and Western road from Macon to Atlanta, and the Western and Atlantic road from Atlanta to Dalton, now forms a continuous line of 391 1/2 miles in length\* from Savannah to Dalton, Murray county, Ga. and with the Memphis Branch railroad, and Stages connect with the following places:

Tickets from Savannah to Macon,	\$5 75
" " " Atlanta,	9 50
" " " Augusta,	6 50
" " " Columbus,	15 00
" " " Opelika,	17 00
" " " Jacksonville, Ala.,	20 00
" " " Talladega,	"
" " " Huntsville, Ala.,	22 00
" " " Decatur,	"
" " " Tusculum, Ala.,	22 50
" " " Tuscaloosa, Ala.,	"
" " " Columbus, Miss.,	28 00
" " " Aberdeen, "	"
" " " Holly Springs, "	"
" " " Nashville, Tenn.,	"
" " " Murphreesboro',	25 00
" " " Columbia, do.,	"
" " " Memphis, do.,	30 00

An extra Passenger Train leaves Savannah on Saturdays, after the arrival of the Steam-ships from New York, for Macon, and connects with the Macon and Western railroad; and on Tuesdays, after the arrival of the Macon and Western cars, an extra Passenger Train leaves Macon to connect with the Steam ships for New York.

Stages for Tallahassee and intermediate places connect with the road at Macon, Mondays, Wednesdays, and Fridays, and with Milledgeville at Gordon daily.

Passengers for Montgomery, Mobile and New Orleans take stage for Opelika from Barnesville through Columbus a distance of 97 miles, or from Griffin through West Point, a distance of 93 miles.

\* The Western and Atlantic railroad will soon be completed between Dalton and Chattanooga, a distance of 423 1/2 miles from Savannah, of which due notice will be given.

† Head of the West Point and Montgomery railroad, on which the fare to Montgomery is about \$2.

**RATES OF FREIGHT FOR MERCHANDISE GENERALLY, FROM SAVANNAH TO MACON.**

Measurement Goods.—Boxes of hats, bonnets, furniture, shoes, saddlery, dry-goods, and other measurement goods, per cubic foot 13 cents.  
Crockery Ware, in crates, boxes or hhds, per cubic foot 10 "  
Goods by Weight, 1st class.—Boxes of glass, paints, drugs & confectionary, per 100 lbs., 50 "  
2d class—Sugar, coffee, rope, butter, cheese, lard, tobacco, leather, hides, copper, sheet and hoop iron, tin, hard and hollow ware, rice, boxes soap and candles, bagging, and other heavy articles not enumerated below, per 100 lbs., 45 "  
3d class—Flour, bacon, liquors, pork, beef, fish, tallow and beeswax, per 100 lbs., 40 "  
4th class—Mill-gearing, pig and bar iron, grind and millstones, nails, spikes and coal, 100 lb. 30 "  
Barrels of beets, bread, crackers, potatoes, ice, fruit, oysters, onions, and all light bbls, each, 75 "  
Oil and molasses per hhd., (smaller casks in proportion) 36 00 "  
Salt per sack not exceeding 4 bushels, 50 "  
Goods consigned to Thos. S. Wayne, Forwarding Agent, Savannah, will be forwarded free of commission. WM. M. WADLEY, Supt.  
Savannah, Ga., February 24, 1850.

**ENGINEERS' AND SURVEYERS' INSTRUMENTS MADE BY EDMUND DRAPER,**

Surviving partner of  
**STANCLIFFE & DRAPER.**



No 23 Pear street,  
near Third,

below Walnut,  
Philadelphia.

**GREAT NORTHERN & SOUTHERN MAIL ROUTE.** From New York to Charleston, S. C. daily, via Philadelphia, Baltimore, Washington City, Richmond, Petersburg, Weldon and Wilmington, N. C.

Travellers by this route, leaving New York at 4 1/2 p.m., Philadelphia at 10 p.m., and Baltimore at 6 a.m., proceed without delay at any point on the route, arriving at Richmond, Va., in a day, and at Charleston, S. C., in two and half days from New York.

Through tickets from New York to Charleston, \$20 00  
" " " " " Baltimore, 7 00  
" " " " " Petersburg, 7 50

For tickets to Richmond and Petersburg, or further information, apply at the Southern Ticket Office, adjoining the Washington Railroad Ticket Office, Pratt Street, Baltimore. STOCKTON & FALLS.  
October, 1849.

**ST. LAWRENCE & ATLANTIC RAILROAD COMPANY.**

Notice is hereby given that the Trains run twice per day between

Montreal and St. Hyacinth, leaving each terminus alternately, until further notice.

Leaving St. Hyacinth at 7 a.m.  
" " " " 3 p.m.  
Leaving Montreal at 10 a.m.  
" " " " 6 p.m.

THOMAS STEERS, Secretary.

May 31, 1849.

**WESTERN AND ATLANTIC RAILROAD, FROM ATLANTA, GA., TO CHATTANOOGA, TENN. 140 Miles.****PASSENGER SCHEDULE.**

Leave Chattanooga daily, Sundays excepted, at 8 1/2 a.m.  
Arrive at Kingston . . . by 12 m.  
" Dalton . . . by 3 p.m.  
" Chattanooga . . . by 6 "

Leave Chattanooga daily, Sundays excepted, at 7 a.m.  
Arrive at Dalton . . . by 9 1/2 "  
" Kingston . . . by 12 m.  
" Atlanta . . . by 4 p.m.

The fare is now permanently reduced to three cents per mile for way as well as through Passengers; children and servants two cents per mile.

There are two Railroad routes from Atlanta to the Seaboard, viz: one by the Georgia Railroad to Augusta, and thence to Charleston by the South Carolina Railroad; the other by the Macon and Western Railroad to Macon, and thence to Savannah by the Central Railroad.

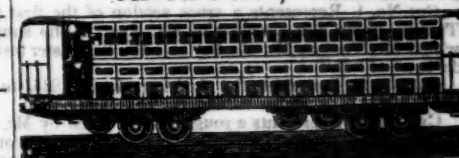
At Kingston, 60 miles north of Atlanta, the Rome Railroad branches off to Rome on the Coosa river, which admits of steamboat navigation as far down as Greensport in Ala. Mail stages are in operation from Rome leading towards Tuscaloosa, Ala., Columbus, Miss., Memphis, Tenn., etc.

At Dalton, 100 miles north of Atlanta, a line of stages branches off to Knoxville, Tenn., which will be superseded by the East Tennessee and Georgia Railroad as rapidly as the same is completed.

At Chattanooga a number of steamboats are in successful operation on the Tennessee river, and from that terminus of the road stages run to Nashville, which will be superseded by the Nashville and Chattanooga Railroad as rapidly as the same is completed.

WM. D. FULLTON, Supt. Transp.

Transportation W. & A. R. R.,  
Atlanta, March, 1850.

**CAR MANUFACTORY CINCINNATI, OHIO.**

**KECK & DAVENPORT WOULD RESPECTFULLY** call the attention of Railroad Companies in the West and South to their establishment at Cincinnati. Their facilities for manufacturing are extensive, and the means of transportation to different points speedy and economical. They are prepared to execute to order, on short notice, Eight-Wheeled Passenger Cars of the most superior description. Open and Covered Freight Cars, Four or Eight-Wheel Crank and Lever Hand Cars, Trucks, Wheels and Axles, and Railroad Work generally.  
Cincinnati, Ohio, Oct. 2, 1848.

# FOWLER M. RAY'S METALLIC INDIA RUBBER CAR SPRINGS.

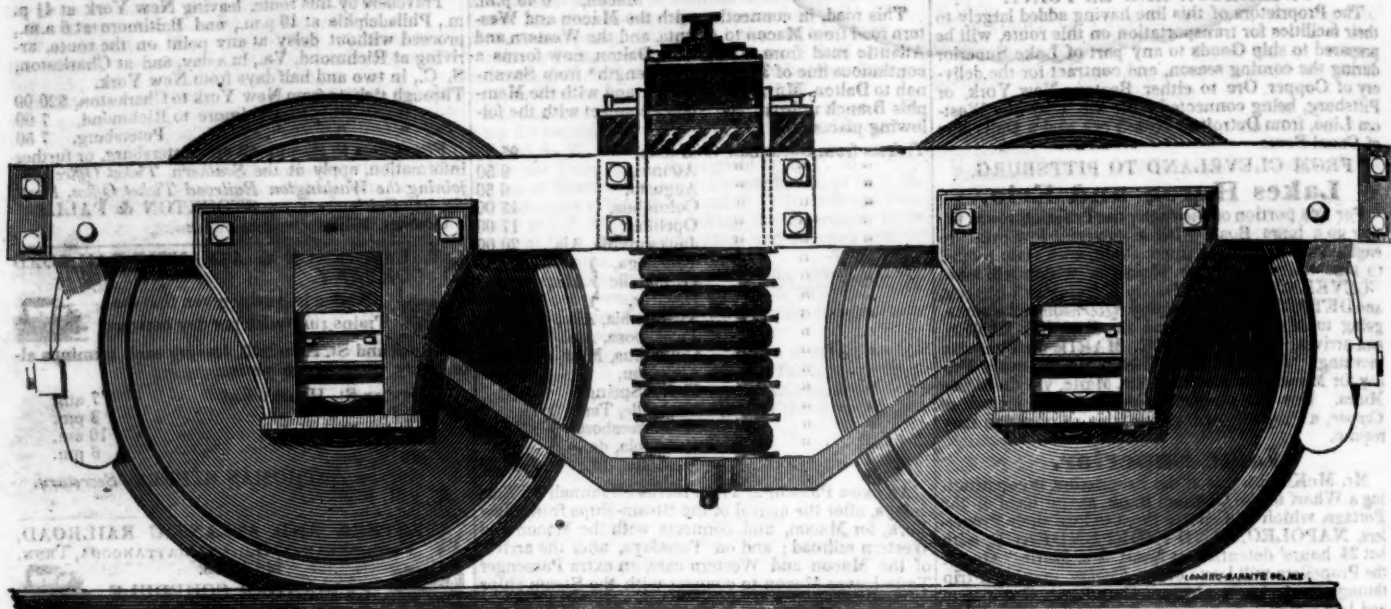


Fig. 1.

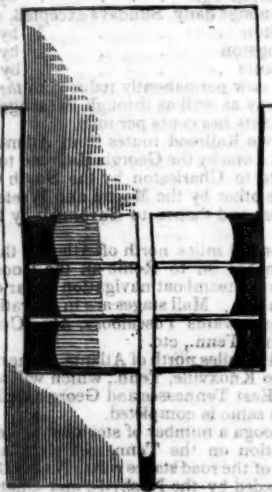


Fig. 2.

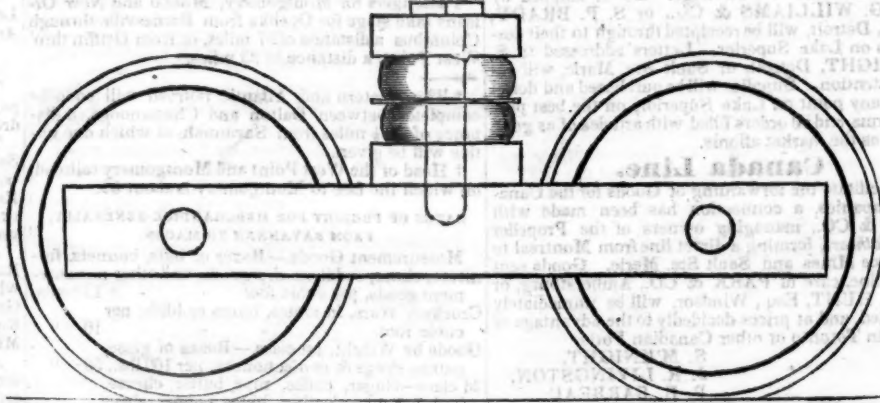


Fig. 3.

So much has been published for the purpose of misleading the public in regard to the inventorship of the India-rubber Railroad Spring, patented in the United States by Mr. W. C. Fuller, that the New England Car Company, proprietors of this invention, have deemed it proper, for the information of Railroad Companies, Car Builders and the public generally, to lay before them the facts upon which they found their claim to this invention, and to a Patent therefor.

Cut No. 1. Represents a cross section of the first model made by Mr. Tucker, under the direction of Mr. Ray, in the summer of 1844, and to which Mr. Tucker, Mr. Bradley and Mr. Bannister testify as being the model marked "B."

Cut No. 2. Represents the model made in 1845, to which Mr. Osgood Bradley and Gen. Thos. W. Harvey have testified.

Cut No. 3. Represents a rough sketch made by Mr. Ray in 1844, which he gave to a man about departing for England to take out some patents, who promised to write to Ray after his arrival in that country—which promise he has probably forgotten.

Mr. W. C. Fuller, of England, patented the above Spring in that country on the 23d October, 1845. He filed his enrollment April 23d, 1846, and on the 22d October, 1846, he took out a patent in the United States under the title, "For Improvement in Railway Carriages," when the improvement consisted in the spring, and not in the carriage.

The reader will perceive by the annexed testimony, that the India-rubber Railroad Car Spring was invented by Mr. Ray about two years previous to the date of Mr. Fuller's enrollment.

The Depositions are omitted for want of room, but will be published in full in the course of a few weeks.



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